Vol. 1075 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

bute to:

PATENTS

February 10, 1987

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

February 10, 1987 Volume 1075 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed as of Nov. 1, 1986 and was announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
All cases:	1015.00
International fees	
Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

DONALD J. QUIGG,
Sept. 30, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Dec. 1986

Affirmed	171
Affirmed in Part	41
Reversed	78
Total	290

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 7, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,429,419 through 4,430,758
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge

are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 23, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,359,791	06/216,171	11/23/82
4,359,796	06/289,800	11/23/82
4,359,797	06/257,371	11/23/82
4,359,809	06/246,930	11/23/82
4,359,823	06/218,644	11/23/82
4,359,825	06/241,608	11/23/82
4,359,835	06/223,060	11/23/82
4,359,870	06/351,899	11/23/82
4,359,872	06/302,279	11/23/82
4,359,879	06/221,912	11/23/82
4,359,887	06/217,208	11/23/82
4,359,892	06/216,468	11/23/82
4,359,931	06/225,941	11/23/82
4,359,939	06/256,114	11/23/82
4,359,942	06/216,417	11/23/82
4,359,951	06/228,472	11/23/82
4,359,966	06/249,334	11/23/82
4,359,972	06/273,683	11/2/382
4,359,977	06/222,223	11/23/82
4,359,985	06/227,684	11/23/82
4,359,995	06/217,466	11/23/82
4,360,001	06/270,923	11/23/82
4,360,002	06/217,841	11/23/82
4,360,005	06/230,307	11/23/82
4,360,006	06/248,715	11/23/82
4,360,012	06/235,723	11/23/82
4,360,015	06/263,685	11/23/82
4,360,035	06/295,807	11/23/82
4,360,036	06/269,797	11/23/82
4,360,045	06/221,789	11/23/82
4,360,060	06/269,778	11/23/82
4,360,062	06/243,108	11/23/82
4,360,066	06/236,449	11/23/82
4,360,079	06/339,038	11/23/82
4,360,105	06/257,713	11/23/82
4,360,135	06/313,743	11/23/82
4,360,138	06/230,597	11/23/82
4,360,147	06/267,175	11/23/82
4,360,153	06/235,710	11/23/82
4,360,172	06/221,545	11/23/82
4,360,187	06/275,267	11/23/82
4,360,190	06/243,898	11/23/82
4,360,198	06/232,192	11/23/82
4,360,199	06/218,614	11/23/82
4,360,215	06/261,502	11/23/82
4,360,235	06/251,383	11/23/82
4,360,256	06/253,403	11/23/82
4,360,270	06/234,500	11/23/82
4,360,285	06/223,899	11/23/82
4,360,328	06/273,672	11/23/82
4,360,332	06/314,125	11/23/82
4,360,335	06/297,230	11/23/82
4,360,339	06/230,216	11/23/82
4,360,344	06/249,643	11/23/82
4,360,347	06/243,971	11/23/82
4,360,348	06/236,476	11/23/82
4,360,360	06/250,107	11/23/82
4,360,363	06/349,423	11/23/82
4,360,394	06/230,225	11/23/82
4,360,424	06/255,779	11/23/82
4,360,427	06/251,350	11/23/82
4,360,430	06/260,707	11/23/82
4,360,432	06/300,871	11/23/82
4,360,436	06/296,543	11/23/82
4,360,454	06/274,854	11/23/82
4,360,459	06/251,172	11/23/82
4,360,467	06/299,704	11/23/82
4,360,468	06/306,771	11/23/82
4,360,475	06/252,050	11/23/82
4,360,525	06/306,974	11/23/82
4,360,530	06/320,262	11/23/82
4,360,533	06/330,543	11/23/82
4,360,539	06/275,070	11/23/82
4,360,559	06/288,774	11/23/82
4,360,584	06/245,158	11/23/82
4,360,604	06/327,929	11/23/82
4,360,608	06/268,057	11/23/82
4,360,646	06/258,707	11/23/82
4,360,659	06/260,874	11/23/82
4,360,666	06/266,030	11/23/82
4,360,667	06/266,031	11/23/82
4,360,668	06/266,266	11/23/82
4,360,671	06/308,635	11/23/82
4,360,680	06/282,905	11/23/82
4,360,699	06/333,708	11/23/82
4,360,740	06/298,318	11/23/82
4,360,755	06/221,953	11/23/82
4,360,765	06/237,994	11/23/82
4,360,847	06/222,410	11/23/82
4,360,852	06/249,850	11/23/82
4,360,862	06/215,880	11/23/82
4,360,896	06/230,177	11/23/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,922,377, Re. S.N. 929,425, Filed Nov. 12, 1986, Cl. 426/645, HEAT-PROCESSED DEHYDRATED BACTERIOLOGICALLY-STABLE PORK RIND PRODUCT AND PROCESS FOR PREPARING SAME, Kenneth F. Whittle, Owner of Record: *Protein Foods (U.K.) Ltd., Tipton, England,* Attorney or Agent: Richard E. Fichter, et al., Ex. Gp.: 130

4,477,164, Re. S.N. 919,835, Filed Oct. 15, 1986, Cl. 354/286, CAMERA SYSTEM OPERABLE IN ACCORDANCE WITH STORED MEMORY, Masaaki Nakai, et al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Platon N. Mandros, et al., Ex. Gp.: 210

4,487,345, Re. S.N. 940,293, Filed Dec. 11, 1986, Cl. 224/155, BACKPACK CHAIR, Mel P. Pierce, et al., Owner of Record: *Inventor,* Attorney or Agent: Louis J. Knobbe, et al., Ex. Gp.: 240

4,487,939, Re. S.N. 940,241, Filed Dec. 10, 1986, Cl. 548/311, N-(HYDROXYMETHYL)-N-(1,3-DIHYDROXYMETHYL - 2,5 - DIOXO - 4 - IMIDAZOLIDINYL)-N'-(HYDROXYMETHYL)UREA, Philip A. Berke, et al., Owner of Record: *Sutton Laboratories, Inc., Chatham, N.J.,* Attorney or Agent: J. Ernest Kenney, et al., Ex. Gp.: 120

4,497,323, Re. S.N. 941,041, Filed Dec. 12, 1986, Cl. 128/68, EXHAUST VALVE HAVING A CONSTANT BLEED RATE, Masahiro Matsuura, et al., Owner of Record: *Matsushita Electric Works, Ltd., Kadma-Shi, Japan,* Attorney or Agent: Ellsworth H. Mosher, et al., Ex. Gp.: 330

4,512,889, Re. S.N. 941,306, Filed Dec. 12, 1986, Cl. 210/225, FILTER PRESS, Ichiro Noda, et al., Owner of Record: *Ishigaki Kiko Co., Ltd., Tokyo, Japan,* Attorney or Agent: Timothy L. Tilton, et al., Ex. Gp.: 130

4,513,045, Re. S.N. 940,718, Filed Dec. 11, 1986, Cl. 428/137, SHEET TYPE FELT, Alfredo A. Bondoc, et

al., Owner of Record: *GAF Corp., Delaware,* Attorney or Agent: Joshua J. Ward, et al., Ex. Gp.: 150

4,515,522, Re. S.N. 941,686, Filed Dec. 15, 1986, Cl. 414/747, PIPELAYING APPLIANCE, John T. Sonerud, Owner of Record: *Inventor,* Attorney or Agent: Wallace D. Newcomb, et al., Ex. Gp.: 310

4,527,578, Re. S.N. 927,817, Filed Nov. 6, 1986, Cl. 134/57R, AUTOMATIC VEHICLE WASHER, Julian L. Klein, et al., Owner of Record: *Ryko Manufacturing Co.,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 240

4,531,094, Re. S.N. 932,572, Filed Nov. 20, 1986, Cl. 324/309, METHODS AND APPARATUS OF OBTAINING NMR SPECTRA, Roger J. Ordidge, et al., Owner of Record: *Oxford Scientific Ltd.,* Attorney or Agent: Paul N. Kokulis, et al., Ex. Gp.: 260

4,544,209, Re. S.N. 939,512, Filed Nov. 13, 1986, Cl. 301/37AT, MOTOR VEHICLE WHEEL CENTER INCLUDING AN ANTI-THEFT FEATURE, Martin Braungart, Owner of Record: *BBS Kraftfahrzeugtechnik, GmbH & Co. KG, Schidtach, West Germany,* Attorney or Agent: Richard E. Dick, et al., Ex. Gp.: 310

4,561,154, Re. S.N. 939,065, Filed Dec. 8, 1986, Cl. 24/136K, WEDGE-TYPE ROPE SOCKET CONNECTION AND METHOD, Terry L. Briscoe, Owner of Record: *Esco Corp., Portland, Oreg.,* Attorney or Agent: Jerome F. Fallon, Ex. Gp.: 350

4,569,198, Re. S.N. 930,101, Filed Nov. 15, 1986, Cl. 60/203.1, HEATER/EMITTER ASSEMBLY, Gordon L. Cann, Owner of Record: *Techninon, Inc., Irvine, Calif.,* Attorney or Agent: Leonard W. Sherman, et al., Ex. Gp.: 340

4,591,101, Re. S.N. 940,356, Filed Dec. 11, 1986, Cl. 239/533.12, THROTTLING-PINTLE NOZZLE FOR FUEL INJECTION IN AN INTERNAL-COMBUSTION ENGINE, Manfred Fortnagel, Owner of.Record: *Damler-Benz Aktiengesellschaft, Stuttgart, West Germany,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 310

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Survey of Registered Practitioners in Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on Nov. 18, 1986 from the Office of Enrollment and Discipline (OED) to all practitioners in patent cases whose last names begin with A through D. Enclosed with the letter is a data sheet which must be completed and returned to OED as soon as possible. All data sheets returned to OED will be acknowledged. Failure by a practitioner to submit a completed data sheet within the time period specified in the survey letter will result in the practitioner being removed from the register in accordance with 37 CFR 10.11(b).

If your last name begins with A through D and you have not received a data sheet or if you returned the data sheet to OED and you did not receive an acknowledgment within three (3) months after returning the data sheet to OED, please contact Patricia M. Jordan at (703) 557–1728.

Dec. 2, 1985.

CAMERON WEIFFENBACH,
Director, Office of Enrollment & Discipline.

Reinstatement to Roster of Attorneys and Agents

The following is a list of persons whose names have been previously removed from the Register of Attorneys and Agents pursuant to the provisions of 37 CFR 10.11(b), and are being reinstated in view of the required fee and information they have furnished the Office of Enrollment & Discipline.

Jan. 14, 1987.

CAMERON WEIFFENBACH,
Director, Office of Enrollment and Discipline.

de Gorter, Benjamin, 3 Avenue Vavin, Paris, France 75006

Deppenbrock, Bonnie L., 706 Wage Dr., SW, Leesburg, Va. 22075

Finlayson, Joseph A., Jr., 8410 Indian Head Hwy., Fort Washington, Md. 20744

Flynn, Steven H., Union Carbide Corp., Law Dept., Old Ridgebury Rd., Danbury, Conn. 06817

Milks, William C., III, Townsend & Townsend, 2000 Steuart St. Tower, One Market Plz., San Francisco, Calif. 94105

Piggott, Donald J., P.O. Box 9338, Portland, Oreg. 97207

Tachner, Leonard, 3990 Westerly Pl., Suite 295, Newport Beach, Calif. 92660

Tang, Henry Y. S., Brumbaugh, Graves, Donohue & Raymond, 30 Rockefeller Plz., New York, N.Y. 10112

Tarr, Howard C., 5995 Eldergardens St., San Diego, Calif. 92120

Taylor, Kenneth M., Jr., Corning Glass Works, SP FR–12, Corning, N.Y. 14831

Tenenbaum, Leon E., 67 Prospect Ave., Ardsley, N.Y. 10502

Thienpont, Frank R., 230 W. Monroe St., Chicago, Ill. 60606

Thompson, Alan H., 630 N. Wildwood Ave., Glendora, Calif. 91740

Thorpe, Calvin E., Thorpe, North & Western, 9662 S. State, Sandy, Utah 84070

Tobia, Annette M., 56 Battle Ave., Princeton, N.J. 08540

Tobor, Ben D., Tudzin & Tobor, 777 N. Eldridge, Suite 650, Houston, Tex. 77079

Torres, Carlos A., P.O. Box 756, 2131 Peachridge Rd., Brookshire, Tex. 77423

Torsiglieri, Arthur J., 2 Linden La., Chatham, N.J. 07928

Toth, Victor J., 2719 Soapstone Dr., Reston, Va. 22091

Trigg, Hastings S., 3707 John Barnes La., Fairfax, Va. 22033

Tucker, Laurey D., Hubbard, Thurman, Turner & Tucker, 2100 One Galleria Tower, Dallas, Tex. 75240

Turner, Perry E., P.O. Drawer E, Northridge, Calif. 91328

Twomey, Thomas N., Harris Corp., Semiconductor Sector, P.O. Box 883, Melbourne, Fla. 32901

Uebler, Ernest A., Mortenson & Uebler, P.A., Suite 4, 1601 Milltown Rd., Wilmington, Del. 19808

Uilkema, John K., Limbach, Limbach & Sutton, 2001 Ferry Bldg., San Francisco, Calif. 94111

Uretsky, Jack L., 206 N. Grant, Hinsdale, Ill. 60521

Utecht, Francis A., Fulwider, Patton, Rieber, Lee & Utecht, 11 Golden Shore, Suite 510, Long Beach, Calif. 90802

Valliere, A. James, Norand Corp., 550 Second St., S.E., Cedar Rapids, Iowa 52401
Vandenberg, John D., Kenyon & Kenyon, One Broadway, New York, N.Y. 10004
van Loo, William J., Jr., 1727 Bahia Vista St., Sarasota, Fla. 33579
Vargo, Paul M., Dressler, Goldsmith, Shore, Sutker & Milnamow, 1800 Prudential Plz., E. Randolph St., Chicago, Ill. 60601
Vogele, Allan W., TRW, Inc., 1900 Richmond Rd., Cleveland, Ohio 44124
Waite, Frank R., 16 Sorrel Dr., Wilmington, Del. 19803
Walford, Craig W., M. W. Kellogg Co., Three Greenway Plz., Houston, Tex. 77046
Walker, Alfred M., 742 Veterans Memorial Hwy., Hauppauge, N.Y. 11788
Waraksa, Mirek A., 595 Bay St., Suite 1200, Toronto, Ont., Canada M5G 2C2
Ward, John P., Kerr-McGee Corp., Kerr-McGee Ctr., Oklahoma City, Okla. 73125
Wasp, Edmund J., Nordson Corp., 555 Jackson St., Amherst, Ohio 44001
Wasserman, Abraham, 440 S. Doheny Dr., Beverly Hills, Calif. 90211
Webb, William A., William, Brinks, Olds, Hofer, Gilson & Lione, Ltd., Suite 4100, One IBM Plz., Chicago, Ill. 60611
Weber, Robert C., 25 Greenbrier Rd., Buffalo, N.Y. 14226
Weinstein, Louis, Weinstein & Kimmelman, Suite 2410 Two Mellon Bank Ctr., Philadelphia, Pa. 19102
Weisz, Louis J., Oldham, Oldham & Weber Co., L.P.A., 1225 W. Market St., Akron, Ohio 44313
Welch, Ronald D., Allied Corp., 401 N. Bendix Dr., South Bend, Ind. 46620
West, Paul B., Ladas & Parry, 26 W. 61st St., New York, N.Y. 10023
Westerman, William F., Armstrong, Nikaido, Marmelstein & Kobovcik, 1725 K St., N.W., Suite 912, Washington, D.C. 20006
Wheeler, David E., 1308 Cleveland Ave., Canton, Ohio 44703
Wiener, Bernard N., IBM Corp., 2000 Purchase St., Purchase, N.Y. 10577
Williamson, Walter L., Nynex Enterprises, 441 Ninth Ave., New York, N.Y. 10001
Winger, Jon C., O'Donnell, Steutermann & Winger, Suite 612, 200 W. Broadway, Louisville, Ky. 40202
Winick, Steven J., Ademco 165 Eileen Way, Syosset, N.Y. 11791
Wisser, Scott A., Kenyon & Kenyon, One Broadway, New York, N.Y. 10004
Wolfe, Frank A., 909 Fifth Ave., Ford City, Pa. 16226
Wood, Donald L., Krass & Young, 2855 Coolidge, Suite 210, Troy, Mich. 48084
Woolcott, Kenneth J., Hybritech, Inc., P.O. Box 269006, San Diego, Calif. 92126
Wozny, Thomas M., Andrus, Sceales, Starke & Sawall, 735 N. Water St., Milwaukee, Wis. 53202
Wu, Jack H., Foxboro Co., Pat. Dept. 187 (52-1J), 38 Neponset Ave., Foxboro, Mass. 02035
Yablon, Jay R., New York State Legislative Commission on Science & Technology, 99 Washington Ave., Suite 704, Albany, N.Y. 12210
Yablonsky, Rebecca, One University Plz., Hackensack, N.J. 07601
Yarmovsky, Max, 64 Bryant Dr., Livingston, N.J. 07039
Young, Philip, 19 W. 34th St., New York, N.Y. 10001
Youngs, Maynard L., Travenol Laboratories, Inc., One Baxter Pkwy., Deerfield, Ill. 60015
Yungman, Bruce A., Hilliard-Lyons Patent Mgmt., Inc., 545 S. Third St., Louisville, Ky. 40202
Zelenka, Michael J., U.S. Army Communications Electronics Comm., AMSEL-LG-LP, Fort Monmouth, N.J. 07703
Zelson, Steve T., Pennie & Edmonds, 1155 Ave. of the Americas, New York, N.Y. 10036
Zieg, Robert L., Borg-Warner Corp., 200 S. Michigan Ave., Chicago, Ill. 60604
Zlatos, Stephen E., Woodard, Weikart, Emhardt & Naughton, One Indiana Sq., Suite 2600, Indianapolis, Ind. 46204
Zurawsky, Lawrence G., Zurawsky & Keck, Suite 415 Lawyers Bldg., 428 Forbes Ave., Pittsburgh, Pa. 15219

Reinstatement to Roster of Attorneys and Agents

The following is a list of persons whose names have been previously endorsed as being inactive on the Register of Attorneys and Agents pursuant to the provisions of 37 CFR 10.6(d), and are being reinstated in view of information they have furnished the Office of Enrollment & Discipline.

CAMERON WEIFFENBACH,
Jan. 14, 1987. *Director, Office of Enrollment & Discipline.*

Camby, John J., 4405 Burlington Pl., N.W., Washington, D.C. 20016
Wilhite, Billy J., 2520 Rocky Branch Rd., Vienna, Va. 22180

Patents Available for License or Sale

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers. Applications for license may be addressed to Counsel Patent and Legal Operation, Corporate Research and Development, General Electric Co., P.O. Box 8, Bldg. K-1, Rm. 4A70, Schenectady, N.Y. 12301

4,567,651. PROCESS FOR PRODUCING A BUBBLE PRESSURE BARRIER.
4,618,428. PROCESS FOR RECOVERY OF ZINC FROM PLATING WASTE SOLUTION.

4,048,654. STEROPHONIC TELEVISION SOUND TRANSMISSION SYSTEM, *Eugene M. Cummings*, Lockwood, Alex, FitzGibbon & Cummings, Three First National, Plz., Chicago, Ill. 60602, (312) 782-4860.

4,149,282. BATHTUB SUPPORT GRIP (FRONT PULL), *Ernest Browning*, 2383 Zollinger Rd., Columbus, Ohio 43221, (614) 486-5813.

4,276,484. METHOD AND APPARATUS FOR CONTROLLING CURRENT IN INDUCTIVE LOADS, *C. Riverds*, P.O. Box 4757, Woodbridge, Va. 22194.

4,507,155. CLEANING COMPOSITION AND METHOD, *Robert H. Cheek*, 1042 Buchanan St., N.E., Washington, D.C. 20017, (202) 296-5500.

4,561,554. CONTAINER FOR PRODUCE, FRUITS, GROCERIES AND THE LIKE, *Edmund J. Swincickil*, 1460 South St., Apt. 11, Toledo, Ohio 43609.

4,580,593. DISK VALVE FOR CORROSIVE FLUIDS, *Gunter Herberholz*, c/o Antonelli, Terry & Wands, 1919 Pennsylvania Ave., NW., Suite 600, Washington, D.C. 20006.

S.N. 782,023. ATHLETES FOOT MEDICATION, *Russell Coplen*, 3709 Morse Ave., #7, Sacramento, Calif. 95821.

S.N. 816,248. POPCORN RUBBER, *Russell Coplen*, 3709 Morse Ave., #7, Sacramento, Calif. 95821.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 10, 1987

Re. 32,211	4,587,373	4,607,174	4,614,515
Re. 32,230	4,588,077	4,607,377	4,614,532
4,213,724	4,588,443	4,607,573	4,614,684
4,399,813	4,589,408	4,607,646	4,614,825
4,421,824	4,590,410	4,607,948	4,615,032
4,429,111	4,592,331	4,608,172	4,615,213
4,432,310	4,592,985	4,608,465	4,616,041
4,515,623	4,594,447	4,608,689	4,617,102
4,531,379	4,595,658	4,608,784	4,617,106
4,538,021	4,596,210	4,609,265	4,617,686
4,540,841	4,597,233	4,609,555	4,618,378
4,545,949	4,597,998	4,609,883	4,618,895
4,550,092	4,598,744	4,610,097	4,619,240
4,553,835	4,599,645	4,610,402	4,619,348
4,555,438	4,600,678	4,610,680	4,619,812
4,555,773	4,601,916	4,611,094	4,619,817
4,562,656	4,602,132	4,611,163	4,620,366
4,568,399	4,602,261	4,611,642	4,620,898
4,569,736	4,603,020	4,611,654	4,621,502
4,571,814	4,603,487	4,612,937	4,622,268
4,574,106	4,603,646	4,612,984	4,622,450
4,576,879	4,605,384	4,613,094	4,623,419
4,577,356	4,605,401	4,613,199	4,623,436
4,580,036	4,605,524	4,613,201	4,623,461
4,580,159	4,605,647	4,613,484	4,623,668
4,582,773	4,606,381	4,614,262	4,624,140
4,585,747	4,606,865	4,614,277	4,626,348
4,586,428	4,606,975	4,614,380	

Disclaimers

4,396,959.—*Joel N. Harrison,* Campbell; *Donald V. Daniels,* Santa Cruz and *David A. Brown,* Saratoga, Calif. DATA TRANSDUCER POSITION CONTROL SYSTEM FOR ROTATING DISK DATA STORAGE EQUIPMENT. Patent dated Aug. 2, 1983. Disclaimer filed Apr. 27, 1984, by the assignee, *Quantum Corp.*

Hereby enters this disclaimer to claims 21, 22, 23, 24, 25, 26, 27 and 28 of said patent.

4,453,538.—*John K. Whitney,* Orchard Park, N.Y. MEDICAL APPARATUS. Patent dated June 12, 1984. Disclaimer filed Dec. 6, 1985, by the assignee, *Gaymar Industries, Inc.*

Hereby enters this disclaimer to claims 15, 16, 17, 18, 19 and 20 of said patent.

4,493,726.—*Kurt Burdeska,* Basel, Switzerland; *Guglielmo Kabas,* deceased, late of Aesch, Switzerland, by *Anni Kabas-Maskulinski,* heir; *Hans-Georg Brunner,* Lausen and *Werner Fory,* Basel, Switzerland. PHENYLPYRIMIDINES AS ANTIDOTES FOR PROTECTING CULTIVATED PLANTS AGAINST PHYTOTOXIC DAMAGE CAUSED BY HERBICIDES. Patent dated Jan. 15, 1985. Disclaimer filed Oct. 27, 1986, by the assignee, *Ciba-Geigy Corp.*

Hereby enters this disclaimer to claim 24 of said patent.

4,532,934.—*George J. Kelen,* New York, N.Y. PACEMAKER MONITORING RECORDER AND MALFUNCTION ANALYZER. Patent dated Aug. 6, 1985. Disclaimer filed Aug. 28, 1986, by the assignee, *Del Mar Avionics.*

The term of this patent subsequent to Sept. 29, 1998 has been disclaimed.

4,533,843.—*Joseph C. McAlexander, III,* Sugarland; *Lionel S. White, Jr.;* and *G. R. Mohan Rao,* Houston, Tex. HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER WITH VOLTAGE BOOST FOR ROW ADDRESS LINES. Patent dated Aug. 6, 1985. Disclaimer filed Sept. 22, 1986, by the assignee, *Texas Instruments, Inc.*

The term of this patent subsequent to Dec. 16, 1997, has been disclaimed.

4,537,028.—*Albert L. Humke,* Cedar Falls, Iowa. EXHAUST PORT. Patent dated Aug. 27, 1985. Disclaimer filed Nov. 24, 1986, by the assignee, *Deere & Co.*

Hereby enters this disclaimer to all claims of said patent.

4,593,224.—*Kazimir Palac,* Carpentersville, Ill. TENSION MASK CATHODE RAY TUBE. Patent dated June 3, 1986. Disclaimer filed Nov. 24, 1986, by the assignee, *Zenith Electronics Corp.*

Hereby enters this disclaimer to claims 18, 20 and 21 of said patent.

4,593,225.—*Leonard Dietch,* Skokie and *Kazimir Palac,* Carpentersville, Ill. TENSION MASK COLOR CATHODE RAY TUBE. Patent dated June 3, 1986. Disclaimer filed Nov. 24, 1986, by the assignee, *Zenith Electronics Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,595,857.—*William A. Rowe,* Palatine and *Paul Strauss,* Chicago, Ill. TENSION MASK COLOR CATHODE RAY TUBE APPARATUS. Patent dated June 17, 1986. Disclaimer filed Nov. 24, 1986, by the assignee, *Zenith Electronics Corp.*

Hereby enters this disclaimer to claim 10 of said patent.

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The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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	Los Angeles Public Library	(213) 612-3273
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	Springfield: Illinois State Library	(217) 782-5430
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
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Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 3, 1987

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-22-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	3-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-29-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	7-25-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	2-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	7-03-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	7-18-84
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	11-06-84
DESIGN, GROUP 290—K. L. CAGE, Director	6-15-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-29-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-15-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-03-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during January 1987, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,487,470 to 3,492,671, inclusive

Plant Patents ..... Numbers 2,959 to 2,966 inclusive

REEXAMINATIONS

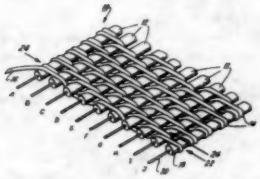
FEBRUARY 10, 1987

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,909,508 (629th)
WOVEN ELECTRICALLY CONDUCTIVE CABLE AND METHOD

Edgar A. Ross, Greenville, S.C., assignor to Woven Electronics Corp., Greenville, S.C.

Reexamination Request No. 90/000,928, Dec. 26, 1985.
Reexamination Certificate for Patent No. 3,909,508, issued Sep. 30, 1975, Ser. No. 427,561, Dec. 26, 1973.
Continuation of Ser. No. 38,469, May 18, 1970, abandoned.
Int. Cl.[4] H01B *7/00*
U.S. Cl. 174—117 M



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **8** is cancelled.

Claims **1–7** and **9** are determined to be patentable as amended.

New claims **10–12** are added and determined to be patentable.

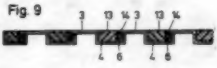
1. A woven electrically conductive cable comprising, in combination, a plurality of elongated, substantially parallel electrical conductors forming warp members of said cable, means for insulating said conductors with respect to one another, easily removable binding means for said conductors, said binding means comprising only a single continuous weft thread woven between and binding said conductors together in a *twill weave* pattern which is staggered in the weft direction, said weft thread passing over at least two adjacent conductors in each [of a plurality of passes] *pass* through said cable *in a manner that the point of interweaving of said weft thread and said conductors is displaced in the weft direction by one conductor on each pass through said cable, and* one end of said weft thread being not bound with said conductors so that it is free to be pulled longitudinally of said conductors to free one end of said conductors from said binding means.

7. A method of preparing a woven, electrically conductive cable for making electrical connections to a plurality of elongated, substantially parallel electrical conductors therein, said method comprising the steps of providing a woven electrically conductive cable having a plurality of elongated electrical conductors, only a single continuous weft thread woven between and binding said conductors together in a *twill weave* pattern which is staggered in the weft direction, said weft thread passing over at least two adjacent conductors in each [of a plurality of passes] *pass* through said cable *in a manner that the point of interweaving of said weft thread and said conductors is displaced in the weft direction by one conductor on each pass through said cable*, one end of said weft thread being not bound with said conductors, and pulling said weft thread in the longitudinal direction of said conductors to remove said *weft* thread from said cable at an end of said cable.

B1 3,957,084 (630th)
DEVICE FOR CARRYING FLEXIBLE CABLES OR PIPES FROM A FIXED CONNECTION POINT TO A MOBILE CONSUMER BY MEANS OF A FLEXIBLE TUBE

Werner Jung, Rheydt, Fed. Rep. of Germany, assignor to Katrapat AG, Zug, Switzerland

Reexamination Request No. 90/000,900, Nov. 6, 1985.
Reexamination Certificate for Patent No. 3,957,084, issued May 18, 1976, Ser. No. 441,104, Feb. 11, 1974.
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1973, 7305486[U]
Int. Cl.[4] F16L *11/00*
U.S. Cl. 138—122



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5–16** is confirmed.

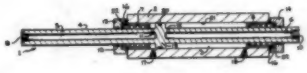
Claims **1–4** are cancelled.

6. A device according to claim **1**, wherein the spacer devices consist of a continuous flexible strip fixedly arranged in the said peripheral portion of the tube.

B1 3,994,539 (631st)
SELF-CONTAINED ACTIVATED SLIDE APPARATUS AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Nathan Gottlieb, 27406 Pierce, Southfield, Mich. 48076

Reexamination Request No. 90/000,908, Nov. 15, 1985.
Reexamination Certificate for Patent No. 3,994,539, issued Nov. 30, 1976, Ser. No. 598,078, Jul. 22, 1975.
Int. Cl.[4] F16C *29/04*
U.S. Cl. 384—49



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **3–5** is confirmed.

Claims **1** and **2** are cancelled.

5. A slide apparatus comprising, in combination:
first means having a first internal fluid pressure structure;
second means having a second internal fluid pressure structure;

said first means and said second means being slidable relative to one another;

at least a portion of said second means being disposed within said first means;

bearing means disposed between said first means and said second means;

third means operably connected to said first and second means for distributing and controlling at least one fluid medium within said first internal fluid pressure structure and said second internal fluid pressure structure to produce relative motion between said first means and said second means;

said first means includes a housing;

said first internal fluid pressure structure includes an elongated chamber formed within the interior of said housing;

said second means comprises a single piston rod having a piston disposed substantially centrally along said piston rod;

said second internal fluid pressure structure including a first chamber extending from said piston to a first end of said piston rod, and a second chamber extending from said piston to a second end of said piston rod;

said housing and said piston rod being slidable relative to one another;

at least a portion of said piston rod is disposed within said housing

said bearing means is affixed to said housing and contacts the outer surface of said piston rod;

said third means includes a first passageway providing a fluid communication path between said elongated chamber within said housing and the exterior of said housing;

said third means includes a second passageway providing a fluid communication path between the exterior of said housing and said elongated chamber within said housing at a location remote from said first passageway;

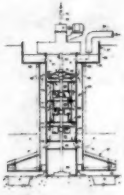
said third means also includes a third passageway providing a fluid communication path between said elongated chamber within said housing and said first chamber within said piston rod; and

said third means includes a fourth passageway providing a fluid communications path between said elongated chamber within said housing and said second chamber within said piston rod.

B1 4,055,494 (632nd)
THICKENING DEVICE AND METHOD

Robert C. Emmett, Jr., Salt Lake City, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.

Reexamination Request No. 90/000,872, Oct. 4, 1985.
Reexamination Certificate for Patent No. 4,055,494, issued Oct. 25, 1977, Ser. No. 768,315, Feb. 14, 1977.
Int. Cl.[4] B01D *21/01;* **C02F** *1/56*
U.S. Cl. 210—715



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–21** are cancelled.

New claims **22–40** are added and determined to be patentable.

22. Apparatus for continuously separating suspended solids from a feed stream liquor by gravity settling comprising:

(a) a liquid holding tank for containing a body of liquid in generally quiescent condition;

(b) a tubular column mounted within said liquid holding tank extending generally vertically therein;

(c) means for introducing feed liquor into the interior of said tubular column at the upper end of the column;

(d) annular baffle means extending generally horizontally around the tubular column on the inside of the column dividing the column interiorly into a plurality of mixing compartments, one below another, for sequentially receiving the feed liquor, said baffle means being centrally open for downward flow of said liquor through said compartments;

(e) a shaft extending down through the column and centrally through the baffle means;

(f) means for driving the shaft;

(g) mixing means on the shaft in each compartment, rotatable with the shaft for stirring the downwardly flowing liquor;

(h) means for introducing a flocculating reagent into each of said compartments as the liquor is flowing downwardly through the compartments, the flocculating agent introduced into each compartment being mixed therein with the downwardly flowing liquor for enhancing the flocculation of suspended solids in the liquor;

(i) the tubular column having means for preventing swirls from being established in said compartments;

(j) the lowermost of said compartments being in discharge communication with the interior of said tank for discharging the flocculated feed liquor from the column into a sludge stratum in the tank;

(k) raking means in said tank to urge solids settled in the tank to underflow discharge; and

(l) overflow means mounted on the tank for removal of clarified supernatant from the tank.

B1 4,373,058 (633rd)
POLYMER CONCRETE COMPRISING FURFURYL ALCOHOL RESIN

Lowell C. Horton, Pensacola Beach, Fla., assignor to The Horton Co.

Reexamination Request Nos. 90/000,422, Jul. 18, 1983 and 90/000,803, Jun. 17, 1985.
Reexamination Certificate for Patent No. 4,373,058, issued Feb. 8, 1983, Ser. No. 244,811, Mar. 17, 1981.
Int. Cl.[4] C08L *71/06;* **C08K** *3/34, 3/36*
U.S. Cl. 524—705

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

1. A polymer concrete composition comprising by weight about 40% to about 70% coarse mineral aggregate ranging in size from about 1½ inches to about 0.187 inch, about 20% to 55% fine mineral aggregate ranging from about 0.187 inch to about 0.0059 inch; about 2% to about 15% silica flour; about 8% to about 12% furfuryl alcohol monomer polymerized in situ by the addition of an acid catalyst contained in amounts of about 8% to about 12% by weight of said monomer, said mineral aggregates having a pH less than about 7.0, and the moisture content of the mineral aggregates being less than about 1% by weight.

B1 4,433,070 (634th)

CULTURED ONYX PRODUCTS AND METHODS THEREFOR

Gilbert B. Ross, Northridge, and Theodore E. Stevens, Azusa, both of Calif., assignors to Contempart Originals, Inc.

Reexamination Request No. 90/001,011, May 20, 1986.
Reexamination Certificate for Patent No. 4,433,070, issued Feb. 21, 1984, Ser. No. 146,749, May 5, 1980.
Int. Cl.[4] C08L *67/06;* **C09D** *5/29;* **B44F** *9/04*
U.S. Cl. 523—171

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **7**, **13–15**, **17**, **22**, **23** and **26** are determined to be patentable as amended.

Claims **2–6**, **8–12**, **16**, **18–21**, **24** and **25**, dependent on an amended claim, are determined to be patentable.

1. A shaped structure having a polishable cultured onyx, cultured marble, or like mineral-appearing surface of predetermined hardness, said structure comprising a locally discontinuous phase comprising a synthetic organic resin portion hardened to said predetermined hardness and a visually distinguishable continuous phase comprising a synthetic organic resin portion separately hardened to said predetermined hardness with said discontinuous phase intimately distributed therein, *said discontinuous phase comprising from about 5% to 55% of the weight of the product,* whereby said structure surface is simulative of onyx or like mineral appearance and uniformly polishable in phase undifferentiated relation.

B1 4,485,759 (635th)

PLANETARY SUBSTRATE SUPPORT APPARATUS FOR VAPOR VACUUM DEPOSITION COATING

Henry E. Brandolf, Inver Grove Heights, Minn., assignor to Multi-Arc Vacuum Systems Inc., Saint Paul, Minn.

Reexamination Request No. 90/000,854, Sep. 13, 1985.
Reexamination Certificate for Patent No. 4,485,759, issued Dec. 4, 1984, Ser. No. 458,902, Jan. 19, 1983.
Int. Cl.[4] B05C *11/14*
U.S. Cl. 118—503

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **21**, **23**, **31** and **35** are cancelled.

Claims **1**, **10**, **12**, **13**, **17**, **29**, **30**, **32**, and **33** are determined to be patentable as amended.

Claims **2–9**, **11**, **14–16**, **18–20**, **22**, **24–28**, **34**, **36** and **37**, dependent on an amended claim, are determined to be patentable.

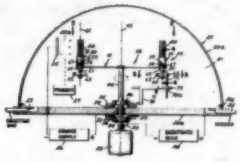
New claims **38–40** are added and determined to be patentable.

1. A substrate holder apparatus for rotatably supporting substrates within an evacuated *electric arc* physical vapor deposition chamber during coating processes, *wherein the substrate is biased at a voltage significantly different from that of the coating plasma particles,* comprising:

(a) a base member configured and arranged for mounting in **[**a**]** *an electric arc* physical vapor deposition chamber, said base member defining at least one work station thereon, *said base member being configured to be centrally rotatably supported within said chamber;*

(*b*) *means for supporting said base member from a central position of said base member;*

[(b)**]** (*c*) means operatively connected with said base **[**member**]** *support means and located external of said chamber* for moving said base member in a manner causing said work station to traverse a closed path within said chamber;



(*d*) *bias means operatively connected with said base member for providing an electrical bias voltage to said base member;*

[(c)**]** (*e*) a substrate holder suitable for holding at least one substrate to be coated, rotatably mounted to said base member at said work station for rotation about an auxiliary axis, said substrate holder being normally free to move about said auxiliary axis as said substrate holder traverses said closed path; **[**and**]**

(*f*) *bearing means operatively engaging said substrate holder for rotatably mounting said substrate holder on said base member and for electrically connecting said substrate holder to said electrical bias voltage;*

[(d)**]** (*g*) activating means *electrically connected at the same bias voltage as said substrate holder,* adjacent said closed path for engaging and rotating said substrate holder a predetermined number of degrees about said auxiliary axis as it passes in proximity to said activating means; whereby a substrate carried by said substrate holder is selectively rotated about said auxiliary axis as the substrate is carried along said closed path; *and*

(*h*) *means for electrically isolating said base member and said activating means from said chamber.*

REISSUES

FEBRUARY 10, 1987

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,348

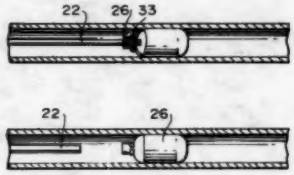
MINIATURE BALLOON CATHETER METHOD AND APPARATUS

Paul H. Pevsner, 4121 King Crest Pkwy., Richmond, Va. 23221

Original No. 4,085,757, dated Apr. 25, 1978, Ser. No. 681,676, Apr. 29, 1976. Application for reissue Dec. 31, 1979, Ser. No. 108,932

Int. Cl.[4] A61M *25/00*

U.S. Cl. 128—325 **14 Claims**



11. In a miniaturized balloon catheter assembly adapted for use in diagnostic and therapeutic procedures in connection with small vessels comprising; a cannula having means at a proximal end for attachment to a source of pressurized fluid and having a small outer diameter for insertion into small vessels, an inflatable tubular balloon having a mouth portion and mounted at the distal end of the cannula in fluid communication therewith, the cannula and balloon adapted to be carried by the fluid in the vessel to a desired location therein, whereupon introduction of an amount of pressurized fluid flow from the source of pressurized fluid will inflate the balloon to fix it in position, activation means responsive to a further amount of pressure to initiate a desired procedure within the small vessel at the desired location, said balloon being detachably mounted at the distal end of said cannula;

the subassembly of a sealing means which, when the cannula and balloon are positioned at the desired location in the human vessel, seals the mouth portion of the balloon, said sealing means including elastomeric self-sealing plug material positioned in the mouth of the inflatable balloon adjacent to the end of the cannula, an expandable circumferential band on the outer surface of the inflatable balloon in concentric position with respect to the plug material therein, said subassembly further comprising a pin having a passageway therethrough and one end mounted at the distal end of the cannula with the passageway therein in communication with the passageway through the cannula and the other end of the pin positioned through a small opening in the self-sealing plug material into fluid communication with the inflatable balloon on the side of the plug material distal from the cannula and when in that position expanding the circumferential band, so that when the balloon is detached from the distal end of the cannula the pin is removed from the plug material, whereupon the elastomeric self-sealing plug material and the expandable circumferential band will close the opening in the plug material and the mouth portion of the balloon to retain the balloon in inflated condition.

Re. 32,349

HAIR ROLLER

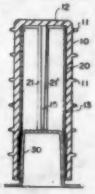
Dov Z. Glucksman, 193 St. Botolph St., Boston, Mass. 02115

Original No. 5,101,983, Ser. No. 254,869, Apr. 16, 1981. Application for reissue May 16, 1984, Ser. No. 610,840

Int. Cl.[4] A45D *2/17*

U.S. Cl. 132—33 R **9 Claims**

10. A hair curling roller adapted to be heated by being positioned on a cone-frustum shaped post of a hair roller heating apparatus, consisting of a hollow, cylindrical outer body of a plastic material, provided with external hair gripping means, said body having a closed upper end and an open lower end; and of a metallic insert in the shape of a cylindrical tube of a length substantially equal to the length of the hollow portion of said outer body, said insert being slit longitudinally over its entire length, and being provided with a plurality of slots extending from the lower



edge of said tube to a predetermined distance from said lower edge, said slots forming a slotted skirt and whereby said slotted skirt of said inserts expands to the slope of the post and adheres to it on most of its surface.

Re. 32,350

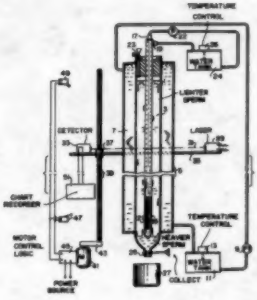
THERMAL CONVECTION COUNTER STREAMING SEDIMENTATION AND FORCED CONVECTION GALVANIZATION METHOD FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING

Bhairab C. Bhattacharya, 297 Moore St., Princeton, N.J. 08540, assignor to Bhairab C. Bhattacharya and Manju Bhattacharya, both of Princeton, N.J.

Original No. 4,092,229, dated May 30, 1978, Ser. No. 734,243, Oct. 20, 1976. Continuation-in-part of Ser. No. 641,501, Dec. 17, 1975, Pat. No. 4,067,465, which is a division of Ser. No. 526,378, Nov. 22, 1974, Pat. No. 3,976,197. Application for reissue Apr. 29, 1982, Ser. No. 373,143

Int. Cl.[4] B01D *57/02;* **C25B** *7/00;* **G01N** *27/26*

U.S. Cl. 204—180.1 **21 Claims**



1. A method of separating sperm cells of differing densities and electrical potentials from semen comprising the steps of:

mixing semen with a liquid suspending medium;

immobilizing the sperm by cooling the mixture;

applying both positive and negative buoyant forces to the sperm whereby more dense sperm attain a different level in the liquid medium than less dense sperm;

applying galvanic force to *a portion of* said medium *containing an unbalanced sperm population as a result of the preceding step* while circulating said medium by convection so as to separate sperm having different net electrical cell surface potentials; and

withdrawing a fraction of the medium containing the desired sperm.

PLANT PATENTS

GRANTED FEBRUARY 10, 1987

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,874

PEACH TREE—DAVID SUN

Thomas O. Chamberlin, Sr., Visalia, Calif., assignor to Metzler Investments, Calif. and Metropolitan Life Insurance Company, both of Del Ray, Calif.

Filed May 29, 1985, Ser. No. 739,014
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described broadly characterized by its cling fruit having a skin of very high dark red to bright yellow color, very firm yellow flesh having excellent holding quality on the tree, as well as its shipping and storage quality, and ripening for harvest about June 1 and reaching full maturity about June 4 in the San Joaquin Valley of California.

5,875

KALANCHOE PLANT NAMED FLAMBOYANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 15, 1985, Ser. No. 712,112
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Flamboyant, as illustrated and described, and particularly characterized by its distinct light orange flower color, dense symmetrical foliage and branching, early and floriferous flowering habit, and its excellent keeping qualities.

5,876

KALANCHOE PLANT NAMED BINGO

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 15, 1985, Ser. No. 712,113
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Bingo, as illustrated and described, and particularly characterized by its bright pink flower color, floriferous habit, dense and relatively small leaves, early flowering, and its excellent keeping qualities.

5,877

KALANCHOE PLANT NAMED CHERRY JUBILEE

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 15, 1985, Ser. No. 712,121
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Cherry Jubilee, as illustrated and described, and particularly characterized by its cherry rose flower color, dense and symmetrical full growth, excellent basal and secondary branching, excellent keeping qualities, and by its pinkish white mature stigmas.

5,878

CHRYSANTHEMUM NAMED 'ORANGE REFLA'

Martinus van der Jagt, Ter Aar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Filed Oct. 25, 1984, Ser. No. 664,874
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plts.—74 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum named 'Orange Refla', as described and illustrated in the foregoing specification and accompanying drawings.

5,879

DIEFFENBACHIA PLANT (TROPIC SUN)

Edmond J. A. Hollevoet, Temse, Belgium, assignor to L. Gary LeBoss, Homestead, Fla.

Filed Apr. 2, 1985, Ser. No. 719,115
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of Dieffenbachia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a general similarity to the parent variety, *Dieffenbachia amoena* cv. Tropic Snow, but having the characteristic of producing multiple basal stems which form a clump of canes, while maintaining the upright form and height of the parent, and having a greater degree of variegated foliage coloration and slightly shorter petioles and leaves.

PATENTS

GRANTED FEB. 10, 1987

ERRATA

For CLASS	See PATENT NO.
128-663	4,641,668
152-158	4,641,670
420-033	4,642,135
165-160	4,642,149
380-048	4,642,424
379-057	4,642,425
370-013	4,642,426
427-214	4,642,447
379-107	4,642,635
380-011	4,642,688

PATENTS

GRANTED FEBRUARY 10, 1987

GENERAL AND MECHANICAL

4,641,379
FACE MASK
Thomas S. Martin, 4045 Hwy. 33 West, West Bend, Wis. 53095
Filed Apr. 25, 1986, Ser. No. 855,553
Int. Cl.[4] A41D *13/00*; A62B *18/02*
U.S. Cl. 2—9 **3 Claims**

1. A protective face mask for snowmobiling and the like having two joinable ends and a center line over the wearer's nose, and comprising:

(a) a flexible body portion covering substantially all of the face below the eyes of a wearer;

a relatively narrow center rise formed in said body portion; broader left and right lateral cheek rises formed in said body portion;

bands formed from the ends of said body portion;

a means for joining said bands together;

at least a pair of flaps formed by a nose cut at the vertical center line of said body portion below said center rise said flaps being sized and shaped to curl inwardly to flexibly contact the sides of the wearer's nose without displacement where said flaps contact the nose creating a seal around the nose and substantially preventing the mask from resting on the bridge of the wearer's nose;

at least one mouth opening formed in said body portion below said nose cut;

(b) a flexible skirt over the nose and mouth area having a top edge;

a generally inverted U-shaped seam located along the edge of said center rise and passing downwardly and outwardly along said top edge from said center rise on opposite sides of said nose cut and said mouth openings along which the entire top edge of said flexible skirt is affixed to the outer surface of said body portion.

4,641,380
ARTICLE OF HEADWEAR CONVERTIBLE BETWEEN HAT AND NECKWARMER AND METHOD
Howard D. Epstein, 249 Shore Dr. No. 6, Winthrop, Mass. 02152
Filed Nov. 25, 1985, Ser. No. 801,209
Int. Cl.[4] A42B *1/06*
U.S. Cl. 2—209.1 **8 Claims**

1. An articles of headwear which is selectively convertible between a neck warmer and a head covering, said article comprising:

(a) a covering having a tubular sidewall and first and seond open non-tapered ends;

(i) said sidewall having a side slit therein, said side slit extending substantially inwardly of said covering from said covering first end and being in communication with said covering first end;

(b) closure means including first and second closure portions;

(i) said first closure portion being permanently mounted in said article generally along said side slit and enabling selective closure of said side slit; said first closure portion permitting selective opening of said side slit from said covering first end inwardly of said covering;

(ii) said second closure portion being permanently mounted in said article generally along said covering first end and enabling selective closure of said covering first end;

(c) whereby in a first mode of operation said article of headwear is utilizable as a head covering by selective closure of said first and second closure portions and fitting said covering over a wearer's head by means of said covering second end; and

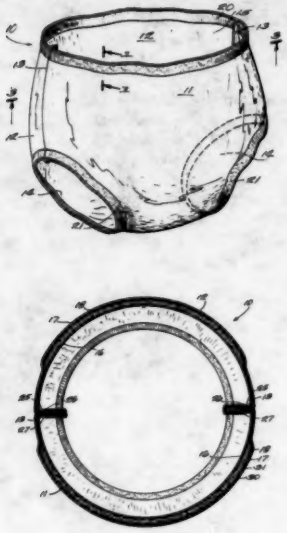
(d) whereby in a second mode of operation said article of headwear is utilizable as a neck warmer by selective opening of said first and second closure portions and pulling said covering over a wearer's head to position said covering around the wearer's neck, with the wearer's head extending outwardly from one of said covering ends.

4,641,381
DISPOSABLE UNDERPANTS, SUCH AS INFANT'S TRAINING PANTS AND THE LIKE
William M. Heran; Glen R. Fleischer; Joyce A. Damico, all of Winnebago County, and Paul T. Van Gompel, Outagamie County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jan. 10, 1985, Ser. No. 690,351
Int. Cl.[4] A41B *9/12*; A61F *13/16*
U.S. Cl. 2—400 **8 Claims**

1. In a three-dimensional disposable underpant including a liquid pervious inner bodyside liner having opposed marginal side edges, a liquid impervious outer cover having opposed marginal side edges and being generally superimposed over said liquid pervious inner bodyside liner, an absorbent batt disposed between said liquid pervious inner bodyside liner and said liquid impervious outer cover, said liquid pervious inner bodyside liner and said liquid impervious outer cover having respective portions of their marginal side edges joined together to form a pair of side seams, a waist opening, and a pair of leg openings, and elastic means extending about said openings for providing elasticity thereto, the improvement comprising:

said liquid impervious outer cover comprising an inner layer

of liquid impervious plastic material adjacent said absorbent batt and an outer layer of nonwoven fibrous material



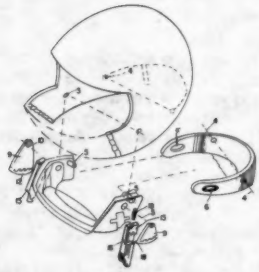
substantially superimposed over and contiguous with said inner layer.

4,641,382

HELMET FASTENING DEVICE

Jean Gessalin, Hameau Grande Fontaine, 77131 Touquin, France

Filed Aug. 20, 1984, Ser. No. 642,411
Claims priority, application France, Aug. 19, 1983, 83 13579
Int. Cl.[4] A42B *3/02*
U.S. Cl. 2—421 **6 Claims**



1. A fastening device for a protective helmet for motorcyclists and other helmet wearers wherein said fastening device prevents said helmet from being pulled off a wearer in the event of a shock and ensures that said helmet will be stable when worn by a wearer, said device comprising:

(a) a front chin strap journalled on a first pair of elongate pins extending through the shell of the helmet to project to the inside of said helmet, said chin strap positioned to fit under the chin of a wearer:

(b) a rear arch pivoted on a second, distinct pair of fixed pins located inside said helmet, said arch positioned to rest against a nape of the neck of a wearer; and

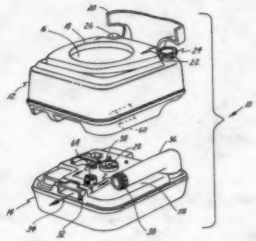
(c) two fingers located inside said chin strap that engage oblong slots located in said rear arch whereby movement between said chin strap and said rear arch is synchronized.

4,641,383

PORTABLE TOILET HOLDING TANK SPOUT

Charles L. Sargent; John M. Antos, both of Ann Arbor; John A. Hoffman, Brighton, and John T. Cameron, Dearborn Heights, all of Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 578,326, Feb. 13, 1984, abandoned, which is a continuation of Ser. No. 383,410, Jun. 1, 1982. This application Mar. 12, 1985, Ser. No. 710,528
Int. Cl.[4] E03D *1/00*; A47K *11/02, 11/03*
U.S. Cl. 4—323 **12 Claims**



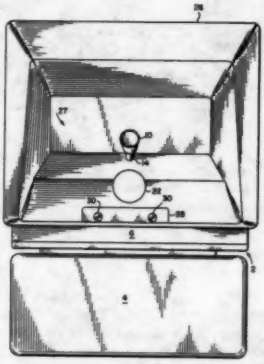
1. In a portable toilet comprising a holding tank having a discharge spout on the exterior of the holding tank through which contents of the holding tank are emptied and closure means for opening and closing the discharge spout, the improvement wherein the discharge spout is rotatably mounted in an aperture in the wall of the holding tank for rotation over a range of positions, and in which the aperture is keyed and the spout has one end correspondingly keyed so as to be fully insertable into and removable from the aperture only at one rotational position of the spout and the keys are contructed such that when the one end of the spout is fully inserted into the aperture and the spout rotated to other than said one position it cannot be separated from the holding tank.

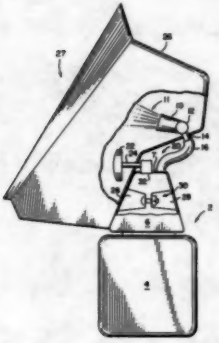
4,641,384

BATTERY OPERATED EYEWASH SYSTEM

David Landsberger, Livingston, and John Broeils, Wyckoff, both of N.J., assignors to Maddak, Inc., Pequannock, N.J.

Filed Feb. 14, 1986, Ser. No. 829,627
Int. Cl.[4] A61H *33/00, 33/04*
U.S. Cl. 4—620 7 Claims





1. A battery operated eyewash system of the type including liquid spraying means having a tank containing a liquid and a rechargeable battery operated pump arranged with the tank, whereby operation of the pump through a switch sprays the liquid through a nozzle, characterized by:

a rigid hood secured in front of the liquid spraying means, with the nozzle thereof extending in an opening in the front of the hood;

actuating means for actuating the switch to operate the pump for spraying liquid through the nozzle;

manually operable means for operating the actuating means extending in the front of the hood; and

the hood opening in the front of the hood accepting the face of a user, whereby the user positions the eyes for receiving the liquid sprayed through the nozzle when the switch actuating means is manually operated through the operating means to operate the pump to spray the liquid through the nozzle.

7. A battery operated eyewash system characterized by:

a tank for containing the liquid;

a rechargeable battery operated pump arranged with the tank and disposed in a housing secured to the tank;

liquid conduit means coupled to the pump and including a spray nozzle;

a switch associated with the pump and arranged on the pump housing for operating the pump to pump liquid from the tank through the liquid conduit means and the spray nozzle;

a rigid hood secured to the pump housing so as to be in front of said housing and tank;

the hood having an opening in the front thereof, and the spray nozzle extending in said opening;

actuating means arranged on the pump housing and arranged with the switch to operate the pump;

manually operable means extending in the front of the hood for operating the actuating means; and

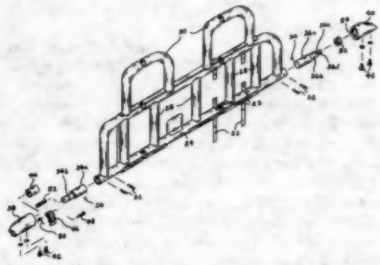
the hood opening accepting the face of a user, whereby the user positions the eyes for receiving the liquid sprayed through the nozzle when the switch actuating means is manually operated through the operating means to operate the pump to spray liquid through the nozzle.

4,641,385

ARMBOARD RAIL

Gerald Peters, Elyria; Eugene P. Hayton, Medina, and Raymond A. Failor, Seville, all of Ohio, assignors to Simmons Universal Corporation, New York, N.Y.

Filed Jul. 29, 1985, Ser. No. 759,987
Int. Cl.[4] A61G *1/00*
U.S. Cl. 5—82 R 5 Claims



1. A rail assembly comprising:

an elongate member having a first end and a second end;

first and second opposing support means, each of said support means including an opening for pivotably supporting said first and second ends of said elongate member, respectively, said elongate member being movable within said respective openings along its longitudinal axis;

means for resiliently urging said elongate member towards said first support means;

said first end of said elongate member including a hinge pin extending within said opening within said first support means, said hinge pin including at least one cylindrical portion and at least one non-cylindrical portion;

said first support means including non-cylindrical walls defining at least a portion of said opening therein, said hinge pin being pivotable within said opening within said first support means when in a first axial position with respect thereto and being restrained from pivotable movement when said non-cylindrical portion of said pin is within said non-cylindrical walls defining said opening within said first support means;

a protective rail secured to said elongate member; and

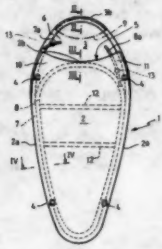
means for preventing axial movement of said elongate member along its longitudinal axis.

4,641,386

METHOD OF AND DEVICE FOR RESTRAINING THE SLEEPING BODY OF AN ASTRONAUT IN CONDITIONS OF WEIGHTLESSNESS

Stoewer Heinz, Ln Kang Dorp, and Ockels Wubbo, An Maastrickt, both of Netherlands, assignors to Agence Spatiale Europeenne, Paris, France

Filed Jul. 1, 1985, Ser. No. 750,171
Int. Cl.[4] A47C *29/00*
U.S. Cl. 5—413 **8 Claims**



1. A device for restraining the sleeping body of an astronaut in conditions of weightlessness, said device comprising:

(a) a sleeping bag comprising an upper and a lower sheet, made of fire-retardant material cloth, and provided with fastening means for fastening said device to a fixed object, said upper and lower sheets each having a linking edge, along which they are secured, and a free edge delimiting an aperture through which the astronaut can wedge himself into said sleeping bag and

(b) means for stressing by stretching said upper and lower sheets, in order to press substantially uniformly the astronaut's body simultaneously in a downward and upward direction, respectively, with a pressure selectively variable by the astronaut before going to sleep, said means comprising a first inflatable and deflatable continuous tube secured to and extending around the periphery of said upper sheet and a second inflatable and deflatable continuous tube secured to and extending around the periphery of said lower sheet, said first and second continuous tube each being provided with an inflating and deflating hose equipped with a valve, said hoses being positioned in the vicinity of the astronaut's head and within reach of either of the astronaut's hands,

(c) wherein an upper portion of said lower sheet juts out from the free edge of said upper sheet, said upper portion being sized, shaped, and positioned to support the astronaut's head and to place it into an Earth-like "normal" position.

4,641,387

BED ENCLOSURE

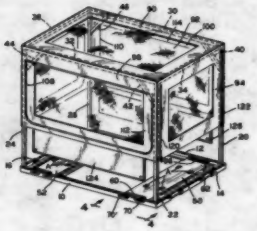
Daniel A. Bondy, Sylvania; Judith A. East, Toledo, and Christina M. Rizzo, Sylvania, all of Ohio, assignors to St. Vincent Medical Center, Toledo, Ohio

Filed Feb. 6, 1986, Ser. No. 826,098
Int. Cl.[4] E04C *1/40*
U.S. Cl. 5—508 **6 Claims**

1. An enclosure for a bed having spaced apart leg supports comprising:

(a) a framework for encompassing the bed, said framework including a floor engaging base frame;

(b) means associated with the floor engaging base frame of said framework including selectively adjustable horizontally disposed plate means provided with spaced apart apertures for retaining the leg supports to militate against relative movement between the bed and said framework; and



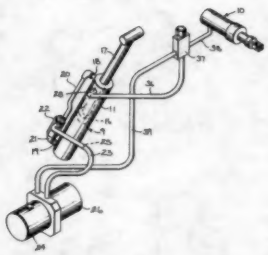
(c) means for covering said framework to provide a confining zone above the bed and interiorally of said covering means.

4,641,388

HYDRAULIC CONTROL SYSTEM FOR A DOCKBOARD

David E. Bennett, deceased, late of Waukesha, and by Barbara E. Bennett, personal representative, Milwaukee, both of Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.

Filed Aug. 1, 1984, Ser. No. 636,688
Int. Cl.[4] E01D *1/00*
U.S. Cl. 14—71.7 **1 Claim**



1. A hydraulically operated dockboard to be mounted on a loading dock, comprising a supporting structure connected to the dock, a ramp hinged at its rear edge to the supporting structure and movable between a generally horizontal position and an upwardly inclined position, a lip hinged to the forward edge of the ramp and movable between a downwardly hanging pendant position and an outwardly extended position, a first hydraulic cylinder unit interconnecting the ramp structure and the supporting structure, means for supplying hydraulic fluid to said first cylinder unit, a predetermined working pressure in said first cylinder unit raising said ramp from the horizontal position to the upwardly inclined position, a second cylinder unit interconnecting the ramp and the lip, second supply means for supplying hydraulic fluid to the second cylinder unit to move the lip from the pendant position to the extended position, said second supply means including a supply line connected to said first cylinder unit, a lip line connected to said second cylinder unit, a return line connected to a storage reservoir for said hydraulic fluid, and control valve means interconnecting said supply line, said lip line and said return line, said valve means having a first position wherein said lip line is connected to said return line and having a second position wherein said lip line is connected to said supply line, biasing means for urging said valve means to said first position, said first cylinder unit being constructed and arranged so that elevation of said ramp to a given position will act to supply fluid at said working pressure from said first cylinder unit to

said supply line, means responsive to said working pressure in the supply line for moving said valve means from the first position to the second position and supplying fluid at said working pressure from said first cylinder unit through said supply line, through said valve means and through said lip line to said second cylinder unit to move the lip from the pendant to the extended position, downward movement of said ramp from said upwardly inclined position providing a back pressure in said supply line sufficient to maintain said valve means in said second position, said valve means being arranged and constructed so that engagement of the extended lip with the bed of a carrier located in front of said dock will release the pressure in said supply line and enable said biasing means to return said control valve means to said first position, movement of said carrier away from said dock causing said lip to fall by gravity from the extended toward the pendant position, downward pivoting movement of said lip acting to displace fluid from said second cylinder unit through said control valve and said return line to said reservoir.

4,641,389

WINDSHIELD WIPER SYSTEM

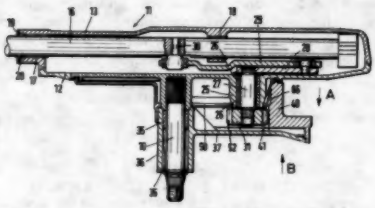
Bruno Egner-Walter, Heilbronn; Eckhardt Schmid, Brackenheim, and Wolfgang Scholl, Gemmrigheim, all of Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Bietigheim-Bissingen, Fed. Rep. of Germany

Filed Apr. 26, 1985, Ser. No. 727,820

Claims priority, application Fed. Rep. of Germany, May 10, 1984, 3417268

Int. Cl.[4] B60S *1/26*

U.S. Cl. 15—250.21 **19 Claims**



1. A reciprocating wiper system comprising:

a gearing having first and second toothed wheels in meshed engagement with each other;

a crank connected to said first wheel;

a reciprocating element coupled to said crank;

a wiper shaft carrying said first wheel, said second wheel being stationary relative to said wiper shaft;

at least one wheel of said first or second wheels having a restraining element thereon, said restraining element preventing said first and second wheels from being axially moved into engagement with each other during assembly except when one tooth of one of said first or second wheels is in alignment with a predetermined space between adjacent teeth of the other wheel of said first or second wheels, said crank being in a predetermined position when said one tooth meshes said adjacent teeth.

4,641,390

WINDSHIELD WIPER EXTENSION MECHANISM

Klaus A. Michalke, Sterling Heights, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

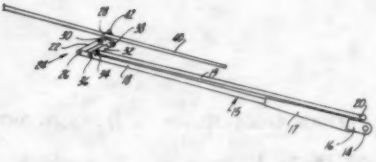
Filed Sep. 23, 1985, Ser. No. 779,349

Int. Cl.[4] B60S *1/32, 1/40*

U.S. Cl. 15—250.23 **1 Claim**

1. On a vehicle body including a windshield having a lower edge, a windshield wiper mechanism for said windshield comprising, a wiper blade having proximate and distal ends, an oscillatable wiper shaft disposed adjacent one lower edge of said windshield and rotatable in alternate directions between a first park position and a second position, a wiper arm having one end drivingly connected to said wiper shaft for rotation therewith throughout a stroke of predetermined angular extent, a pivot shaft disposed adjacent said wiper shaft, a drag arm having one end pivotally connected to said pivot shaft, said wiper arm being of greater length than said drag arm, the improvement comprising;

a three-line parallelogram arrangement extending substantially parallel with the plane of said windshield and connecting said wiper blade to the free end of said wiper arm and the free end of said drag arm, said three-line parallelogram including a pair of outer and inner links and a blade support link, said outer link having its one end pivotally connected to said wiper arm free end, and its other end pivotally connected to said blade support link, said blade support link having its other end pivotally connected to one end of said inner link, said inner link disposed in parallel coplanar relation with said outer link and having its other end pivotally connected to an intermediate point



on said wiper arm, said inner link having an intermediate point thereon pivotally connected to said drag arm free end, whereby said pair of inner and outer links, said blade support link and the portion of said wiper arm between its said free end and its said intermediate point define said parallelogram arrangement, and pin means extending at right angles from said blade support link substantially in the plane thereof in a normal direction away from said wiper arm, said pin means connecting said wiper blade to said second link for movement parallel to said wiper arm, whereby said mechanism operative to position said wiper blade distal end at a radial minimum location when said blade is at said first park position adjacent said windshield one lower edge, and wherein said mechanism operative to traverse said wiper blade upper end on an arc that progressively increases in radial extent relative to a circular arc traversed by said wiper arm free end, such that said blade distal end being positioned at a radially maximum location when said blade is at said second position defined by a predetermined angle with said blade at said first park position adjacent said windshield one lower edge.

4,641,391

COMPACT DIGITAL DISC CLEANER APPARATUS

Robert J. De brey, Edina, Minn., assignor to Geneva Group of Companies, Inc., Eden Prairie, Minn.

Filed Dec. 31, 1985, Ser. No. 814,977

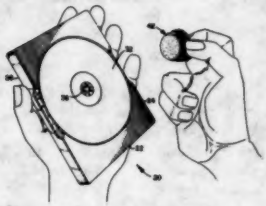
Int. Cl.[4] G11B *3/58*

U.S. Cl. 15—104.94 **16 Claims**

1. A compact digital disc cleaner apparatus for cleaning compact digital discs, comprising:

a housing having oppositely facing top and bottom surfaces, the top surface including pedestal means for positioning thereon a compact digital disc, the pedestal means defining circular recess means for receipt of the compact digital disc, second recess means interconnecting the circular recess means with an outer edge of the housing thereby facilitating grasping of the compact digital disc when positioned in the circular recess means, the bottom surface of the housing including a plurality of receptacle means, each configured for receipt of cleaning pad assembly

means, the cleaning pad assembly means including a handle member and a wetted cleaning pad sealed from outside



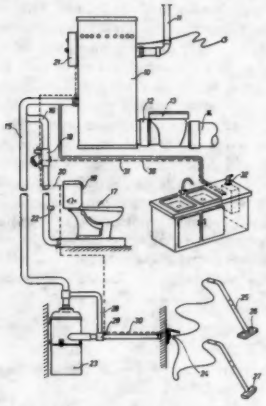
ambient air, whereby the cleaning pad does not dry out for an extended period of time.

4,641,392

MULTIPURPOSE CLEANING AND TRANSPORTATION SYSTEM

Camiel Huisma, Airdrie, Canada, assignor to Oy Wärtsilä Ab, Helsinki, Finland

Filed Aug. 5, 1985, Ser. No. 762,721
Claims priority, application Sweden, Aug. 8, 1984, 8404014
Int. Cl.[4] A47L *5/38*
U.S. Cl. 15—302 **11 Claims**



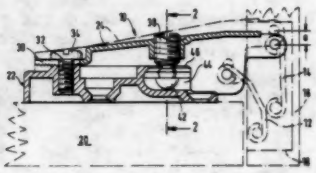
1. A building having a container for collecting liquid, a main pipe system connected to the container and having branches that terminate at several locations through the building, pump means for exhausting air from the main pipe system, and closure devices at the terminations of said branches, whereby the pump means establish a partial vacuum in the main pipe system, a first of the closure devices being a normally-closed socket for detachably receiving a dust cleaning tool so that air is drawn into the main pipe system by way of the dust cleaning tool and said socket and a second of the closure devices being a normally-closed valve, and wherein the building also has a sewage-producing unit connected to the main pipe system by way of the normally-closed valve.

4,641,393

CABINET HINGE

Horst Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Jul. 31, 1985, Ser. No. 760,764
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1984, 3429636
Int. Cl.[4] E05D *7/04*
U.S. Cl. 16—241 **9 Claims**



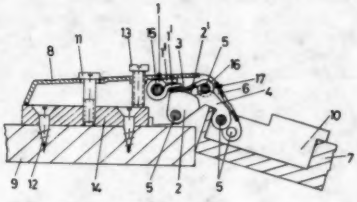
1. A hinge comprising: an elongated mounting plate to be fastened to a supporting wall of a piece of furniture, and an elongated supporting arm mounted for longitudinal adjustment on said mounting plate, said supporting arm having a first longitudinal end area with an open-ended first longitudinal slot, a mounting screw screwed into said mounting plate and having a shaft passing through said first slot, said supporting arm having a second end area with a tap therethrough, said mounting plate having an open-ended second longitudinal slot at an end area adjacent said tap, a setscrew screwed into said tap and having connected thereto a neck portion of reduced diameter and holding means below said neck portion in said second slot, said holding means being a sphere having a circumferential annular groove formed in rotational symmetry with respect to the longitudinal central axis of said setscrew, said second slot having a narrow longitudinal mouth securing said holding means from being lifted out of said second slot towards said supporting arm.

4,641,394

SPRING-BIASED FURNITURE DOOR HINGE PROVIDING INCREASED OPENING ANGLE

Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Apr. 17, 1985, Ser. No. 724,285
Claims priority, application Austria, May 7, 1984, 1497/84
Int. Cl.[4] E05D *3/06*
U.S. Cl. 16—302 **1 Claim**



1. A hinge for mounting a door on an article of furniture, said hinge comprising:
a hinge arm to be mounted on a furniture side wall;
a hinge casing to be mounted on a furniture door;
inner and outer hinge links pivotally mounted to said hinge arm and to said hinge casing by respective hinge link axles, thereby defining a quadrilateral hinge link mechanism connecting said hinge casing to said hinge arm;

a cam member on said inner hinge link at a first said hinge link axle connecting said inner hinge link to said hinge arm, said cam member having a guide surface;

a pressure member having a first end pivotally mounted about a second said hinge link axle connecting said outer hinge link to said hinge arm and a second end;

a leg spring rolled about a bolt mounted on said hinge arm, said leg spring having a leg urging said second end of said pressure member toward said guide surface of said cam member and pivoting said pressure member about said second hinge link axle connecting said outer hinge link to said hinge arm;

said bolt being located at a position opposed to said pressure member such that said leg of said leg spring moves about said bolt in a first circular arc and said second end of said pressure member moves about said second hinge link axle in a second circular arc intersecting said first circular arc;

said first end of said pressure member including a portion rolled around said second hinge link axle, said rolled portion having therethrough a slot, and said inner hinge link extending into said slot when said hinge is in an open position thereof, thereby increasing the opening angle of said hinge.

4,641,395

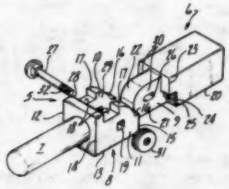
DOWN RIGGER BOOM HINGE

Adam J. Banks, 13755 Jenny Dr., Warren, Mich. 48093

Filed Sep. 20, 1985, Ser. No. 778,569

Int. Cl.[4] A01K *97/10*; F16M *13/00*

U.S. Cl. 16—348 **3 Claims**



1. A hinge having automatic execution of stays at the end points of travel, comprising:

(a) a stationary hinge element, one end of which having means to connect to a stationary object, the other terminating in a hinge base from which emanates from opposite sides thereof two parallel projections, forming a "U" shaped member, each said parallel projections having a lip, a circularly curved surface, a slot, and an aperture;

(b) a rotatable hinge element, one end of which having means to connect to an object to be rotated, the other end of which having a lip and a projection member which inserts into said "U" shaped member, having a circularly curved surface of convex shape and having an elongated aperture therein which aligns with said aperture in each of said parallel projections when said projection member is inserted into said "U" shaped member; and,

(c) a pin which inserts through said aligned apertures thereby holding said stationary and said rotatable hinge elements together, and forming a pivot point about which said rotatable hinge element may pivot in relation to said stationary hinge element, guided by sliding interaction of the respective surfaces of said stationary and rotatable hinge elements including the sliding interaction of said circularly curved surface of convex shape on said projection member in relation to the surface of said hinge base of said "U" shaped member, where one end of travel is defined by interlocking of said lips, and the other end of travel is defined by said lip of said rotatable hinge element inserting into said slot in said stationary hinge element.

4,641,396

FURNITURE HINGE WITH AXLE MEMBERS MOUNTING HINGE LINKS TO HINGE CASING AND RETAINED IN HOLDING FLANGES

Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft mbH, Höchst, Austria

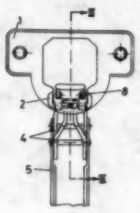
Filed Mar. 20, 1985, Ser. No. 714,085

Claims priority, application Austria, Apr. 17, 1984, 1278/84

The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

Int. Cl.[4] E05D *3/06*

U.S. Cl. 16—370 **6 Claims**



1. A furniture hinge comprising:

a hinge arm to be mounted on a first furniture part;

a hinge casing to be fitted to a second furniture part, said hinge casing having a bottom, walls extending from said bottom, and at least one holding flange punched from one said wall and extending into the interior of said hinge casing, said holding flange having two sides connected to said hinge casing and defining with said hinge casing a channel extending transversely thereof;

inner and outer hinge links having first ends pivoted to said hinge arm and second ends pivoted to said hinge casing; and

means pivotally mounting said second end of said outer hinge link to said hinge casing, said mounting means comprising first and second axle members, each said axle member including first and second journals extending parallel to each other and joined by a transversely extending connecting member, said first journals being shorter than said second journals, said first and second axle members being positioned as mirror images of each other with said journals extending through spaced side walls of said hinge casing into said interior thereof, with said first journals directed toward each other along substantially the same axis with a space therebetween, and with said second journals directed toward each other along substantially the same axis, said second end of said outer hinge link being pivotally mounted on said first journals, and said second journals extending into and being pivotally retained within said channel between said holding flange and said hinge casing.

4,641,397

DRAFTING MECHANISM FOR SPINNING MACHINES

Giancarlo Mondini, Winterthur; Walter Hefti, Ettenhausen, and Siegfried Kaufmann, Wil, all of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Mar. 26, 1985, Ser. No. 716,232

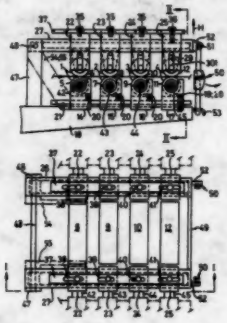
Claims priority, application Switzerland, Mar. 30, 1984, 1621/84

Int. Cl.[4] D01H *5/74*

U.S. Cl. 19—258 **13 Claims**

1. A drafting mechanism for spinning machines for drafting a staple fiber web, a staple fiber sliver, or a staple fiber slubbing, comprising a plurality of roller pairs including at least one input roller pair, one intermediate roller pair, and one output roller pair, each of said roller pairs including a lower

roller and a pressure roller having opposed end regions; means for supporting said rollers and including a first group of support elements receiving said lower rollers and arranged so that at least some of said support elements of said first group are displaceable relative to each other, and a second group of support elements receiving said pressure rollers, the support



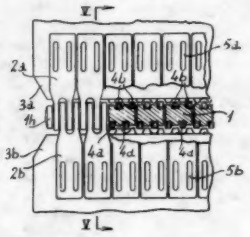
elements of at least one of said groups of support elements being connectable with one another at said opposed end regions of the respective rollers; and further comprising connecting means for connecting the support elements of said at least one group of said support elements and including at least one connecting element.

4,641,398

DEVICE FOR PROVIDING AN ARTICULATED COUPLING BETWEEN TWO COMPLEMENTARY SERIES OF BELT-FASTENERS

Jean-Francois Schick, Paris, France, assignor to Goro S.A., Chelles, France

Filed Nov. 18, 1985, Ser. No. 799,723
Claims priority, application France, Dec. 11, 1984, 84 18870
Int. Cl.[4] F16G *3/02*
U.S. Cl. 24—33 R **8 Claims**



1. A device for providing an articulated coupling between the hinge-knuckles of two complementary series of belt-fasteners fixed respectively on each edge of the end portions of a conveyor belt to be joined together, wherein:

said device is constituted by a series of independent elements designed in the general form of rod segments having a circular cross-section and placed one after another in succession transversely of the conveyor belt, the length of each rod segment being of limited value corresponding at a maximum to the length of the hinge-knuckles of two belt-fasteners located in oppositely-facing relation; and

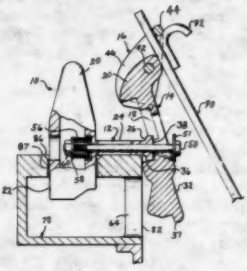
said elements have relatively displaced portions each corresponding to the width of one hinge-knuckle so as to ensure that said elements are thus stationarily fixed in the longitudinal direction after position.

4,641,399

INTERCONNECTING CONTAINER LOCK

Robert G. Jackson, 401 N. 8th St., P.O. Box 277, Benton Harbor, Mich. 49022

Filed Sep. 18, 1985, Ser. No. 777,275
Int. Cl.[4] B65D *25/02*
U.S. Cl. 24—287 **7 Claims**



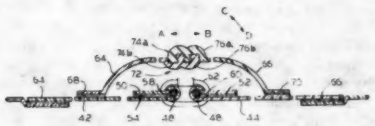
1. A container lock assembly adapted for interlocking overlying corner blocks, said corner blocks having opposed horizontal openings and exposed vertical openings, said lock assembly comprising a lock arm and a load component, said load component including a load plate and projection means extending from opposite sides of said load plate for positioning within said corner block opposed horizontal openings, said lock arm pivotally connected to said load component and including an upper retainer means and a lower retainer means, said lock arm being pivotal relative to said load component between a locked position wherein said lock arm upper and lower retainer means are positioned for fitting within said corner block vertical openings to secure said blocks against vertical separation and an unlocked position wherein at least one of said retainer means is positioned for release from a said corner block vertical opening.

4,641,400

AIRTIGHT, WATERTIGHT MECHANICAL SEAM FOR JOINING PANELS OF INDUSTRIAL STRENGTH FABRICS

Jack Moreland, Dolton, Ill., assignor to MPC Containment Systems, Ltd., Chicago, Ill.

Filed Aug. 15, 1983, Ser. No. 523,657
Int. Cl.[4] A44B *17/00*
U.S. Cl. 24—389 **4 Claims**



1. A mechanical seam for joining confronting edges of two or more large area panels of industrial fabric which together form a containment protection membrane for covering large surfaces on the earth to prevent moisture, chemicals, or pollutants from leaking through the soil membrane, said seam comprising:

a. mechanical connector means including at least a cable embedded in and running along the entire length of each of said confronting edges for resisting longitudinal stress along the entire length of said confronting edges, and a plurality of fastener means distributed along said entire length for mechanically joining the cable in each of said confronting edges of said large area panels at a plurality of points along said entire length to keep the large area panels from pulling apart, said cables in adjoining large area panels being generally parallel to each other when the membrane is loaded by pulling forces acting within the membrane; said mechanical connector means comprising

a serpentine cable having the form of a series of catenary arches immobilized on confronting edges of said large area panels with the arches of the catenary positioned to resist and support agdinst loading strain acting within the fabric and being oriented to support the forces within said fabric when said large area panels are bearing a load, the immobilization of said serpentine cable in the large area panels positioning the catenary arches in adjoining large area panels to be aligned and to come together in a confronting relationship when the panels are joined in order to uniformly distribute stresses within said panels;

b. an elongated panel flap attached to each of said large area panels which form said membrane, said panel flaps being bonded to said large area panels near and running along the entire length of each of said confronting edges, said panel flap being bonded to said large area panel at a location which is more distant than said cable from the confronting edge; and

c. all plastic slide closure means attached to each of said panel flaps for joining and sealing said panel flaps when closed, said slide closure and said panel flaps covering said mechanical connector means including said fastener means joining said cables, said plastic slide closure means giving said membrane a continuous and unbroken large-area-panel-to-large-area-panel watertight sealing surface.

4,641,401

SOCKET FOR SNAP FASTENER

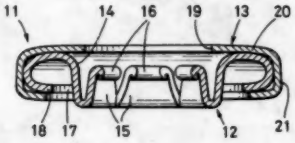
Yoshihiko Hasegawa, Kawasaki, Japan, assignor to Scovill Japan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 593,334, Mar. 26, 1984, abandoned. This application Aug. 30, 1985, Ser. No. 771,333

Claims priority, application Japan, May 9, 1983, 58-67843

Int. Cl.⁴ A41F *1/02*

U.S. Cl. 24—681 **4 Claims**



1. A socket constituting the female member of a snap fastener, which comprises a metal spring button part including an annular base, an inner portion extending inwardly and downwardly from the inner portion of said annular base, and further extending inwardly and upwardly and split into flaps which terminate with tongues arranged circularly for elastic engagement with a stud as the male member of the snap fastener, an outer portion curvedly extending outwardly and downwardly from the outer portion of said annular base and then inwardly to form portions to guide and receive the legs of a backing member of the snap fastener, and a cover plate having a circular opening of a larger diameter than the inside diameter of the circle defined by said tongues, said cover plate being secured to the periphery on the tongue side of said annular base, said cover plate being upwardly spaced from said tongues so as to allow said tongues to clear said cover plate at any flexing position of said tongues.

4,641,402

BRANCH-OFF CLIP AND ASSEMBLY

Jan Vansant, Leuven, and Noel M. M. Overbergh, Bertem, both of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

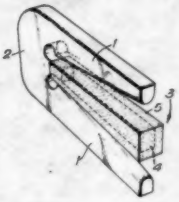
Filed Nov. 28, 1983, Ser. No. 556,211

Claims priority, application United Kingdom, Nov. 29, 1982, 8234001

Int. Cl.⁴ B29C *27/24*

U.S. Cl. 24—703 **7 Claims**

1. A clip which comprises at least two outer legs and an inner leg, so arranged that the clip can be positioned over the outer surface of a recoverable sleeve at an end thereof with the outer legs outside the sleeve and the inner leg inside the sleeve; the inner leg comprising a heat-activatable sealing material, and a heat conductive means for conducting heat from the outer legs to the sealing material, in which the heat conductive means comprises a metal prong which substantially entirely



melts at or shortly after activation of the sealing material and wherein the dimensional integrity of at least part of the heat conductive means weakens on heating at or shortly after activation of the sealing material, thus reducing the thermal connection, or reducing the rididity of at least a portion of the inner leg, or both.

4,641,403

MACHINE FOR FLAME PROCESSING OF TEXTILE FABRIC WEBS

Walter Osthoff; Otmar Hohenester, both of Wuppertal, and Anton Gessner, Remscheid, all of Fed. Rep. of Germany, assignors to Osthoff Senge GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

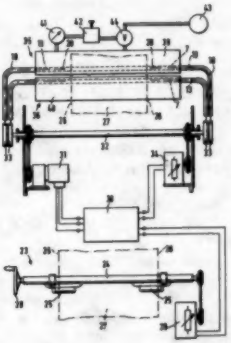
PCT No. PCT/DE84/00199, § 371 Date May 29, 1985, § 102(e) Date May 29, 1985, PCT Pub. No. WO85/01530, PCT Pub. Date Apr. 11, 1985

PCT Filed Sep. 29, 1984, Ser. No. 740,047

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335304

Int. Cl.⁴ D06C *9/02*

U.S. Cl. 26—3 **13 Claims**

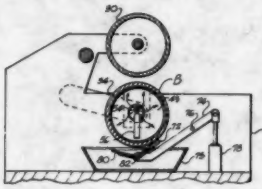


1. A singeing machine for flame processing of webs of textile goods comprising a burner means including a combustion chamber means opening into a singeing slot, a gas mixing chamber means connected to said combustion chamber means by a mixture feed slot means, damper means adjustable from ends thereof for at least partially sealing said mixture feed slot means to enable an adjustment of a flame width, said damper means including at least one flexible sealing strip means for said mixture feed slot means, said at least one flexible sealing strip means being insertable from at least one end of said burner means and being gas permeable to an extent sufficient to feed an ignition flame.

4,641,404
POROUS WARP SIZING APPARATUS

Scott O. Seydel; William D. Letbetter, both of 80 Broad St., NW., Atlanta, Ga. 30303, and William H. Cutts, P.O. Box 748, Clemson, S.C. 29631

Continuation-in-part of Ser. No. 308,449, Oct. 5, 1981, Pat. No. 4,513,485. This application Apr. 26, 1985, Ser. No. 727,867
Int. Cl.[4] D02H 5/02
U.S. Cl. 28—178 17 Claims



10. Apparatus for applying a sizing material to individual warp yarns passing between a pressure roll and an application roll wherein said yarns are arranged generally side by side in a warp sheet and a metered amount of sizing material is pressed into said warp yarns wherein said application roll is driven by a drive means and includes a hollow interior, a continuous cylindrical application surface formed on the outside surface of said application roll having an extent for applying sizing material generally across the entire width of said warp yarn sheet passing through a nip of said rolls; a cylindrical porous distribution layer next adjacent said application surface for distributing said sizing material onto said application surface; a porous flow control membrane carried adjacent an interior boundary region of said distribution layer in fluid communication with said hollow interior of said application roll; said porous membrane including porous material having a pore size substantially smaller than the pore size of the porous material of said distribution layer to meter the flow of sizing material through said distribution layer and onto said application surface; delivery means for delivering a pressurized sizing material into said hollow interior of said application roll in fluid flow communication with said flow control membrane while warp yarns are passing through the nip of said rolls and said apparatus.

4,641,405
SERVO SYSTEM METHOD AND APPARATUS SERVO VALVE APPARATUS THEREFOR AND METHOD OF MAKING SAME

C. Brad Green, Mesa; William Dobson, Scottsdale, and Stephen G. Abel, Mesa, all of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 15, 1984, Ser. No. 641,113
Int. Cl.[4] B21D 53/00; B23P 15/00
U.S. Cl. 29—157.1 R 14 Claims

1. The method of making a pressure balanced servo valve apparatus of closed-center type comprising the steps of:

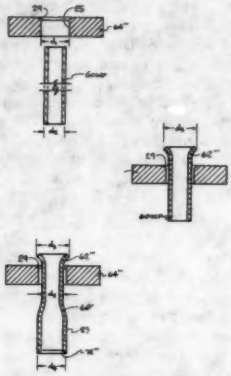
(a) forming a poppet member work piece having a body portion of outer diameter d_2 and one of a head portion end or seat portion end having a respective outer diameter (d_3 or d_4) exceeding d_2;

(b) forming a seat member having an aperture therethrough of inner diameter d_1 larger than diameter d_2 and less than diameter (d_3 or d_4) and defining a seat circumscribing said aperture and substantially of sealing diameter d_1;

(c) uniting the products of steps (a) and (b) by inserting said poppet member work piece body portion through said aperture;

(d) expanding said poppet member work piece body portion at the end thereof opposite said one end to define the other of said head portion end or seat portion end having a respective outer diameter (d_3 or d_4) also exceeding d_2; and

(e) utilizing steps a-d to permanently retain said poppet member and said seat member in relatively movable cooperable union whereby said seat member and said poppet

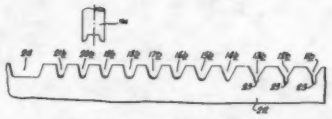


member are sealingly and movably cooperable at said head portion and said seat to selectively control fluid flow therebetween.

4,641,406
METHOD OF FORMING A RACK MEMBER

Peter R. Rogers, Chepstow, Wales, assignor to Cam Gears Limited, Hertfordshire, United Kingdom

Filed Dec. 19, 1983, Ser. No. 562,714
Claims priority, application United Kingdom, Dec. 31, 1982, 8237076
Int. Cl.[4] B21H 5/00
U.S. Cl. 29—159.2 8 Claims



1. A method of forming a workpiece into a rack having a linear array of teeth located between opposite ends of the rack, the teeth in the linear array being disposed at a plurality of final tooth angles, said method comprising the steps of:

cutting a linear array of teeth in a workpiece, at least certain of the teeth in the linear array of cut teeth having a tooth angle which is both less than the largest tooth angle of the plurality of final tooth angles and greater than the smallest tooth angle of the plurality of final tooth angles, and

thereafter, deforming at least said certain teeth to have tooth angles corresponding to said final tooth angles.

4,641,407
TOOLING FOR ELASTOMERIC SWAGING MACHINE

Gerald G. Blevins, Edmonds; Fred Johnson, Jr.; Frank R. Lentz, both of Seattle, and John P. Root, Kingston, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 14, 1985, Ser. No. 734,026
Int. Cl.[4] B21D 41/02; B23P 11/00
U.S. Cl. 29—237 2 Claims

1. A swaging machine comprising:

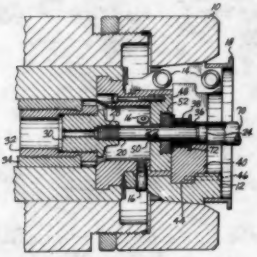
a drawbolt having an axial shaft and a radial pressure surface;

a tubular elastomeric expander received onto the shaft and positioned to be compressed by the pressure surface when the drawbolt is pulled axially; and

tooling for use in attaching a tube to an inner surface of a ferrule, said inner surface having circumferential grooves thereon and terminating in a radial shoulder which one end of the tube abuts against, said tooling comprising the combination of:

die means including a main split die body surrounding said draw bolt and radially moveable towards said draw bolt, a split die insert having an interior cavity shaped to closely receive a particular type of ferrule, and means for releasably securing the die insert in said body; and

anvil means abutting radial surface portions of the die insert and having an axial opening through which the shaft of the drawbolt extends; said anvil means including a main body portion having an insert cavity surrounding said opening, and a removable anvil insert closely receivable into said insert cavity and having fixed means for containing the elastomeric expander and preventing said expander from extruding along the drawbolt; said anvil insert abutting radial surface portions of a ferrule received in the interior cavity of the die insert; said means for containing including bearing means through which the shaft of the drawbolt slides and a radial abutting surface at one end of the bearing means that abuts the radial end of said expander opposite said pressure surface on the drawbolt; said means for containing being fixed relative to the die means when the drawbolt is pulled axially to compress the elastomeric expander; and said means for containing including a boss on the anvil insert that terminates in said radial abutting surface, that has an outer circumferential surface extending axially from said radial abutting surface, and that is dimensioned to be received into said ferrule with said outer circumferential surface adjacent to an inner circumferential surface of said ferrule.

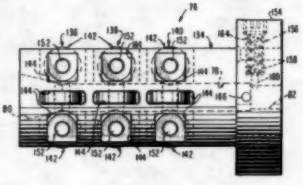


4,641,408

PLUGGER GUIDE FOR ALIGNING AN END PLUG AND A FUEL ROD TUBE END

Kenneth K. Klapper, and David A. Boatwright, both of West Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 3, 1985, Ser. No. 730,141
Int. Cl.[4] B25B *27/14*
U.S. Cl. 29—271 **11 Claims**



1. Apparatus for guiding a hollow tubular end of a nuclear fuel rod tube toward an end plug for application of said end plug into said tube end, said apparatus comprising:

(a) a guide housing having an elongated central longitudinal bore with one end for receiving the end plug and an opposite end for receiving the fuel rod tube end;

(b) a plurality of sets of rolling elements disposed in said housing at axially spaced positions along and about said bore thereof, said rolling elements in each set being positioned in fixed relation with respect to one another to receive the fuel rod tube end therebetween and align the tube end with the end plug as the tube end is moved through said bore and into engagement with the end plug; and

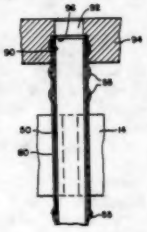
(c) retaining means disposed adjacent to said one end of said housing bore for engaging the end plug so as to maintain it in a stationary seated position at said one end of said housing bore.

4,641,409

RECONSTITUTING A NUCLEAR REACTOR FUEL ASSEMBLY

John M. Shallenberger, O'Hara Township, Allegheny County, and Stephen J. Ferlan, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 422,224, Sep. 23, 1982, abandoned. This application May 24, 1984, Ser. No. 613,833
Int. Cl.[4] B21K *21/16;* B23P *17/04, 23/00;* G21C *3/30*
U.S. Cl. 29—401.1 **8 Claims**



1. A method for reconstituting a nuclear reactor fuel assembly having its uppermost control rod guide thimble sleeves coaxially disposed within its first top nozzle adaptor plate control rod passageways and attached to its first top nozzle adaptor plate, comprising:

(a) circumferentially cutting the sleeve walls below the area of attachment to sever the sleeves from the first adaptor plate;

(b) removing the first top nozzle, including the first adaptor plate, from the cut sleeves;

(c) obtaining a second top nozzle with its adaptor plate having a plurality of its control rod passageways with a groove axially disposed below the corresponding area on the first top nozzle adaptor plate from which the sleeves were severed;

(d) inserting the cut sleeves into the second top nozzle adaptor plate control rod passageways to an axial distance above said grooves; and

(e) circumferentially bulging a corresponding plurality of the inserted cut sleeves into said grooves.

4,641,410

METHOD AND APPARATUS FOR MAKING A JOINT FOR STEEL TUBES

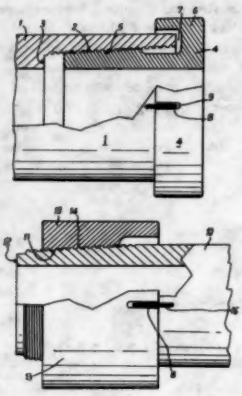
Bernard A. Plaquin, and Louis Fradin, both of Aulnoye, France, assignors to Vallourec, Paris, France

Filed Mar. 22, 1985, Ser. No. 714,970

Claims priority, application France, Mar. 22, 1984, 84 04432

Int. Cl.[4] B23Q *17/00;* **G01B** *3/48, 3/40*

U.S. Cl. 29—407 **2 Claims**



1. Process for manufacturing a pipe joint comprising one male element with an external conical threading and a torque limitative shoulder at its end and one female element with a corresponding internal conical threading and an inside correponding torque limitative shoulder consisting of:

pre-machining the male and the female elements;

final machining the threadings of the male and of the female elements;

providing a male thread gauge corresponding to the threading of the female element and a female thread gauge corresponding to the threading of the male element, each of said gauges being provided with an index disposed on a generatrix, the position of said indexes being such that when the male and the female gauges are screwed together by hand, said indexes are located on the same generatrix;

engaging by hand said male thread gauge on the female element and noting a mark on the female element on the same generatrix as the index of said male thread gauge;

engaging by hand said female thread gauge on the male element and noting a mark on the male element on the same generatrix as the index of said female thread gauge;

providing a male threaded mandrel made of a steel with high mechanical characteristics having on its end the shape that the external torque limitative shoulder of the male element must have after its machining is completed, said male threaded mandrel being provided with an index located on the same generatrix as the index of said female gauge when said female gauge is screwed by hand onto said male threaded mandrel;

providing a female threaded mandrel made of a steel with high mechanical characteristics having the internal shape that the internal torque limitative shoulder of the female element must have after its machining is completed, said female threaded mandrel being provided with an index located on the same generatrix as the index of said male gauge when said male gauge is screwed by hand into said female threaded mandrel;

screwing said male threaded mandrel into the female element until the generatrix of the index of the male threaded mandrel is positioned at a predetermined distance beyond the generatrix of the index of the female element and disengaging the male threaded mandrel from the female element;

screwing said female threaded mandrel onto the male element until the generatrix of said index of the female threaded mandrel is positioned at a predetermined distance beyond the generatrix of the index of the male element and disengaging the female mandrel from the male element.

4,641,411

METHOD AND APPARATUS FOR THE MANUFACTURE OF A SCREEN ROLLER

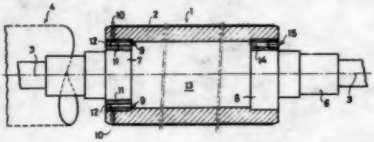
Antonius M. Meulen, Helmond, Netherlands, assignor to Stork Screens B.V., Boxmeer, Netherlands

Filed Apr. 24, 1985, Ser. No. 726,488

Claims priority, application Netherlands, May 2, 1984, 8401401

Int. Cl.[4] B23P *12/00;* **B21B** *31/08;* **B41F** *13/10*

U.S. Cl. 29—424 **3 Claims**



1. A method of making a screen roller having a support cylinder encircled by a tightly fitting sieve-like screen comprising the steps of:

providing a cylindrical sieve-like screen having an internal diameter slightly less than the outside diameter of the support cylinder;

coating the screen to render it substantially fluid impervious;

applying fluid pressure between the screen and the support cylinder to expand the screen to fit over the support cylinder and while maintaining it expanded sliding the screen and support cylinder axially together;

removing the fluid pressure to allow the screen to contract into tightly fitting engagement around the support cylinder; and

treating the screen to remove the fluid impervious coating from its outer surface.

4,641,412

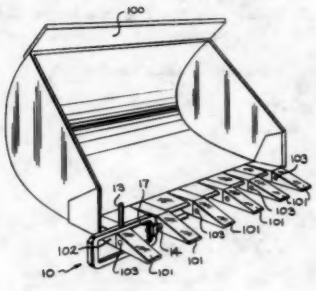
PIN DRIVING TOOL

Glenn E. Olger, 14460 Robson Rd., Bath, Mich. 48808

Filed Sep. 19, 1985, Ser. No. 777,688

Int. Cl.[4] B23P *19/00, 11/00*

U.S. Cl. 29—426.5 **8 Claims**



1. A pin driving tool for inserting or removing pins from teeth on a digging means, comprising:

(a) a rectangular driving bar having a ' longitudinal driving axis, said bar including spaced apart side rails on opposite sides of the axis and opposed first and second ends between said rails, said rails and said ends forming an opening large enough to enable said driving bar to be positioned around one of such teeth, said second end having an opening opposite the first end along the axis;

(b) a driving punch means removably mounted in said hole, said punch means having two ends, one end being shaped for removing or inserting one of such pins from said teeth on said digging means, said other end having fastening means for fastening said punch means to said driving bar;

(c) a holding means removably connected to said fastening end of said punch means to fasten said punch means to said driving bar and to allow the mounting of different punches in the driving bar;

(d) a handle means mounted to one of said side rails of said driving bar perpendicular to the driving axis for holding the tool in one hand; whereby said driving bar is fitted around a first tooth with the punch means engaged with a pin on an adjacent tooth with the punch means engaged with a pin on an adjacent tooth to enable the pin on the adjacent tooth to be removed or inserted.

6. A method for removing or inserting pins which comprises:

(a) providing a pin driving tool for inserting or removing a pin which holds teeth in place on a digging means bucket where the tool comprises a driving bar having a longitudinal driving axis with spaced apart side rails on opposite sides of the axis and opposed first and second ends between the rails defining an opening which fits around at least one first tooth on a digging means having a plurality of spaced apart teeth each held in place by pins on the digging means, wherein the first end is for driving the bar, and a drive punch means mounted on the second end of the bar along the axis and shaped for removing or inserting one of the pins holding the teeth on the digging means, wherein the tool fits with the opening around the first tooth with the punch means engaged with the pin on a next adjacent second tooth to be removed or inserted;

(b) placing the driving bar between the plurality of teeth with the drive punch means against the pin; and

(c) driving the bar at the first end to remove or insert the pin.

4,641,413

TOOL CHANGER

Ellert Hallqvist, Västerås, Sweden, assignor to SMT Machine Company AB, Sweden

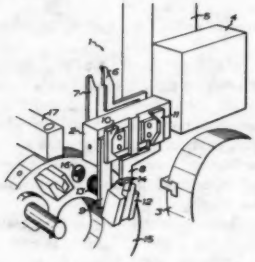
Continuation-in-part of Ser. No. 262,733, May 12, 1981, abandoned. This application Sep. 2, 1983, Ser. No. 528,997

Claims priority, application Sweden, May 13, 1980, 8003582

The portion of the term of this patent subsequent to Feb. 10, 2002, has been disclaimed.

Int. Cl.⁴ B23Q *3/155, 7/04*

U.S. Cl. 29—568 **4 Claims**



1. In a workpiece exchanger apparatus for automatic exchange of workpieces to be secured in an automatic machine tool with longitudinal rails, said exchanger comprising a carriage mounted on said rails, means for driving said carriage along said rails, a slide mounted on said carriage, means for moving said slide vertically along said carriage, first and second jaw pairs mounted on a jaw mount extending laterally from said slide to grip longitudinally oriented workpieces, means for sliding said jaw pairs in the horizontal direction transverse to said rails, and means for rotating said jaw pairs about a horizontal axis transverse to said rails, the improvement comprising a pair of gripping devices secured to each jaw pair, each said pair of gripping devices adapted to grip a tool.

4,641,414

PALLET FOR SEATING INTERCHANGEABLE CLAMPING JAWS OF A CHUCK

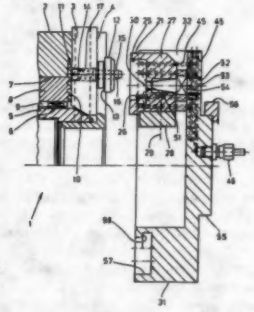
Karl Hiestand, Pfullendorf, Fed. Rep. of Germany, assignor to SMW Schneider & Weisshaupt GmbH, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 679,759

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1983, 3345012

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **21 Claims**



1. A pallet assembly for seating interchangeable clamping jaws on base jaws distributed in a pattern on a chuck, with each base jaw having an axially movable spring detent, comprising:

a pallet having a plurality of radially extending open-faced recesses distributed in the pattern of the base jaws, each recess being bounded by a floor of said pallet;

a clamping jaw disposed in each open-faced recess, said jaw being spaced above said floor, each radially extending open-faced recess being wider in a circumferential direction than a clamping jaw disposed therein for guiding each clamping jaw with lateral clearance;

a plurality of clamping bolts on each side of each recess for entering each recess and engaging a clamping jaw in a respective recess, each clamping bolt mounted for movement with a selected limit to said pallet for movement in one of said open-faced recesses to engage and disengage a clamping jaw therein;

pressure means associated with said pallet and with each clamping bolt for biasing each clamping bolt into engagement with a respective clamping jaw to hold the respective clamping jaw in its open-faced recess;

each clamping jaw having a seating hole for receiving one of the spring detents of a base jaw and for locking the clamping jaw to the base jaw when the clamping jaw is removed from said pallet; and

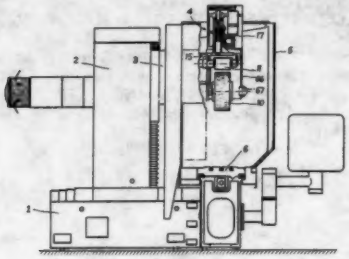
an unlocking bolt fixed in each open-faced recess and extending axially into said seating hole of a clamping jaw in said open-faced recess, each unlocking bolt engageable with a spring detent for dislodging the spring detent from a seating hole to permit unlocking of the clamping jaw from a base jaw, each unlocking bolt having a collar

engaged on said floor and against which the clamping jaw for said unlocking bolt is engaged for supporting the clamping jaw axially spaced from said floor.

4,641,415
TOOL AND ATTACHMENT GRIPPING AND RELEASING MEANS

Jean-Pierre Charra, Saint Etienne, France, assignor to Berthiez-Saint-Etienne, France

Filed May 17, 1985, Ser. No. 735,045
Claims priority, application France, May 18, 1984, 84 07789
Int. Cl.[4] B23Q *3/157*; B24B *45/00*
U.S. Cl. 29—568 **9 Claims**

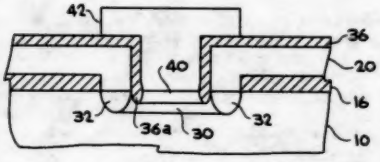


1. Tool and attachment gripping and releasing means for a machine tool and in particular for a grinding machine comprising a contour grinding head whereupon are mounted a rotary spindle carrying a wheelhead and a cartridge carrying a wheel dresser roll, said machine including a maneuvering means comprising a gripping collet for engaging both said wheelhead and said cartridge to enable the removal and replacement of said wheelhead and said cartridge, and thrusting means operable to actuate said gripping means to engage said wheelhead and said cartridge, wherein said wheelhead and cartridge are provided on one of their ends with a compartment or recess having a slot adapted to be engaged by said gripping collet of said maneuvering means, and said thrusting means further operable to selectively actuate means for locking said grinding wheelhead on the machine spindle and to selectively actuate means for locking said dresser roll cartridge on a movable support.

4,641,416
METHOD OF MAKING AN INTEGRATED CIRCUIT STRUCTURE WITH SELF-ALIGNED OXIDATION TO ISOLATE EXTRINSIC BASE FROM EMITTER

Ali Iranmanesh, Mountain View, and Christopher O. Schmidt, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 4, 1985, Ser. No. 707,730
Int. Cl.[4] H01L *21/302, 21/265*
U.S. Cl. 29—576 W **10 Claims**



6. An improved method for forming an active device in an intergrated circuit structure having self-aligned contacts wherein an intrinsic base is formed over a buried collector in a silicon substrate and one or more extrinsic base segments are formed adjacent to said intrinsic base to provide said self-aligned contact through the integrated circuit structure above said extrinsic base segments, the improvement comprising:

(a) forming a layer of polysilicon doped with impurities over said silicon substrate to form said extrinsic base segments by subsequent diffusion of said impurities from said polysilicon layer into said substrate and to form said self-aligned contacts;

(b) selectively etching an opening in said polysilicon layer to expose a portion of a underlying silicon substrate to permit formation of an intrinsic base region in said exposed silicon; and

(c) forming an isolating oxide region between said extrinsic base segment an an emitter electrode subsequently formed in contact with said intrinsic base, said forming comprising the following steps:

(1) etching the sidewalls of said opening to expose a further portion of said silicon substrate adjacent said intrinisc base region

(2) etching away at least a portion of said exposed silicon substrate; and

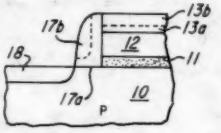
(3) forming said isolation oxide in said etched away portion of said substrate by oxidizing a portion the sidewall of said opening in said polysilicon layer and silicon in said substrate adjacent said etched away portion;

whereby formation of parasitic P-N junctions between said emitter and said adjacent extrinsic base segment is prevented by said isolation oxide formed therebetween.

4,641,417
PROCESS FOR MAKING MOLYBDENUM GATE AND TITANIUM SILICIDE CONTACTED MOS TRANSISTORS IN VLSI SEMICONDUCTOR DEVICES

James M. McDavid, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 624,075, Jun. 25, 1984. This application Sep. 3, 1985, Ser. No. 771,873
Int. Cl.[4] H01L *21/441*
U.S. Cl. 29—571 **14 Claims**



1. A method of making a transistor device, comprising the steps of:

forming a gate electrode on a face of a silicon body, with an oxide coating on the top of said gate electrode,

forming oxide coatings on the sidewalls of said gate electrode by depositing oxide and anisotropically etching,

wherein said oxide coatings on the top and sidewalls of the gate electrode are created by separate depositions but are sealed together to be impervious at the interfaces between the oxide coatings,

applying a layer of metal over said face and reacting said metal with the silicon of the face in areas not covered by the gate electrode and sidewall oxide,

and thereafter removing unreacted metal from said face by etching without disturbing the gate electrode.

4,641,418

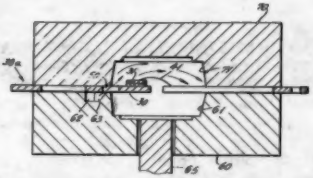
MOLDING PROCESS FOR SEMICONDUCTOR DEVICES AND LEAD FRAME STRUCTURE THEREFOR

Dennis Meddles, Torrance, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Division of Ser. No. 412,928, Aug. 30, 1982, Pat. No. 4,556,896. This application Sep. 10, 1985, Ser. No. 774,346

Int. Cl.[4] H01L *21/56*

U.S. Cl. 29—588 **12 Claims**



1. The process of molding a plastic housing onto a semiconductor lead frame assembly comprising the steps of: enclosing said semiconductor lead frame assembly between an upper mold cavity and a lower mold cavity; injecting molten plastic into a runner formed in said lower mold cavity; leading said molten plastic from said runner through a restricted mold gate opening in said lead frame assembly and into said upper mold cavity; filling the volume formed between said upper and lower cavities with molten plastic from the top thereof, thereby forcing air within said volume to flow out of said volume through pin ejectors in said lower cavity; the rate of flow of said plastic into said volume being controlled by the area of said mold gate opening.

4,641,419

FABRICATING AN INTEGRATED CIRCUIT DEVICE HAVING A VERTICAL PNP TRANSISTOR

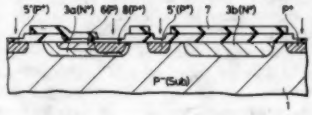
Satoshi Kudo, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1985, Ser. No. 712,761

Claims priority, application Japan, Mar. 16, 1984, 59-49060

Int. Cl.[4] H01L *21/74, 21/265*

U.S. Cl. 29—591 **36 Claims**



1. A process for producing semiconductor devices comprising the steps of:

(1) selectively introducing impurities of a first type of conductivity into one main surface of a semiconductor substrate to form first and second semiconductor regions that are spaced from each other;

(2) selectively introducing impurities of the first type of conductivity into said first semiconductor region and into a portion of said second semiconductor region to increase the impurity concentration in said first semiconductor region and to form a third semiconductor region having an impurity concentration higher than that of said second semiconductor region in a portion of said second semiconductor region;

(3) after the step (2), depositing a semiconductor layer on said one main surface of said semiconductor substrate, said semiconductor layer having a main surface opposite the surface adjacent the substrate;

(4) selectively introducing impurities of the second type of conductivity opposite to said first type of conductivity into said semiconductor layer to form a fourth semiconductor region that extends to said second semiconductor region of the lower impurity concentration from the main surface of said semiconductor layer; and

(5) introducing impurities of the first type of conductivity into a portion of said fourth semiconductor region and into said semiconductor layer that corresponds to said third semiconductor region to form a fifth semiconductor region in said fourth semiconductor region and to form a sixth semiconductor region in said semiconductor layer, said sixth semiconductor region reaching said third semiconductor region.

4,641,420

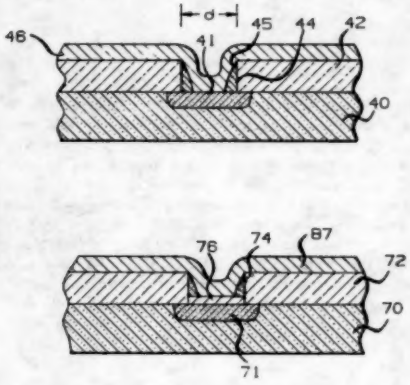
METALIZATION PROCESS FOR HEADLESS CONTACT USING DEPOSITED SMOOTHING MATERIAL

Kuo-Hua Lee, Lower Macungie Township, Lehigh County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 30, 1984, Ser. No. 645,549

Int. Cl.[4] H01L *21/285*

U.S. Cl. 29—511 **37 Claims**



1. A method of making an article including the step of making an electrical contact to an underlying doped semiconductor region by steps comprising forming an opening in an overlying dielectric material,

characterized by

the further steps of thereafter forming a layer of a material that is more conductive than said doped semiconductor region on said doped semiconductor region, conformally depositing a dielectric smoothing material onto the more conductive layer and the sidewall of said opening, removing the dielectric smoothing material from the central portion of the more conductive layer while maintaining a smoothing region of the dielectric smoothing material in contact with the sidewall of the opening, and depositing conducting material at least onto the central portion of the more conductive layer and onto the smoothing region.

30. A method of making an article including the step of making an electrical contact to an underlying region by steps comprising forming an opening having a substantially straight sidewall in an overlying dielectric material.

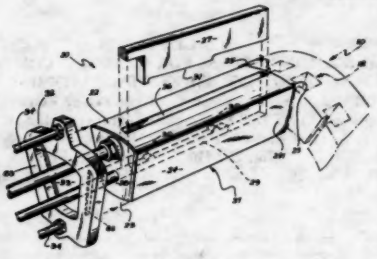
characterized by

the further steps of conformally depositing a smoothing material onto said underlying region and the sidewall of said opening, anisotropically removing said smoothing material from the central portion of said underlyirg region while maintaining a smoothing region of said smoothing material in contact with said sidewall, and thereafter sputtering a metal at least onto the central portion of said underlying region and onto the smoothing region, wherein said underlying region is a metal silicide. region.

4,641,421
METHOD OF FORMING AND INSTALLING FIELD WINDINGS

Louis Stanley, New South Wales, Australia, assignor to Card-O-Matic Pty. Limited, New South Wales, Australia

Division of Ser. No. 587,306, Mar. 7, 1984, Pat. No. 4,594,775. This application Sep. 9, 1985, Ser. No. 774,248
Claims priority, application Australia, Mar. 31, 1983, 8708
Int. Cl.[4] H02K *15/06*
U.S. Cl. 29—596 **13 Claims**

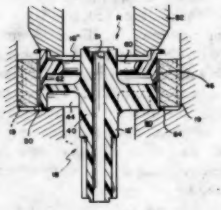


1. A method of forming and installing field windings in a core of an axial flux induction electric machine, said method including the steps of: providing a core wound from metal strip having holes formed along an edge thereof and spaced longitudinally of the strip so that said holes form radially extending slots in a radial face of the core, which slots are provided to receive field windings; spirally winding a length of wire about a former so that the wire forms a plurality of convolutions; aligning the former with two of the slots in said radial face so that the former extends generally normal to said face; and moving the convolutions from the former in said two slots so that the convolutions extend through and between said two slots to thereby form a field winding.

4,641,422
METHOD OF MAKING A PERMANENT MAGNET ROTOR FOR A SYNCHRONOUS MOTOR

Robert F. Weaver, Jamestown, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Division of Ser. No. 894,517, Apr. 7, 1978, abandoned, which is a continuation of Ser. No. 668,314, Mar. 18, 1976, abandoned. This application Mar. 16, 1984, Ser. No. 660,601
Int. Cl.[4] H02K *15/02*
U.S. Cl. 29—598 **2 Claims**



1. A method of forming a permanent magnet rotor comprising:

providing as one piece, an elongated body portion and a circular disc extending from said elongated body portion between opposed ends thereof and having an outer periphery;

positioning a ring about said elongated body portion between said opposed ends such that said ring is substantially in line with said disc near said outer periphery only;

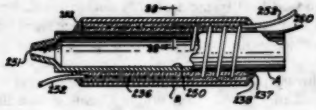
positioning a permanent magnet having at least one recess therein about said ring and said circular disc; and

applying an ultrasonic vibration to at least one of said ring and said circular disc to bond same together near said outer periphery, at least a portion of said ring and said circular disc being melted and flowing into at least said recess whereby said permanent magnet is secured in place.

4,641,423
METHOD OF MAKING ELECTRICALLY HEATED NOZZLES AND NOZZLE SYSTEMS

Walter R. Crandell, Elmhurst, Ill., assignor to Fast Heat Element Manufacturing Co., Inc., Elmhurst, Ill.

Division of Ser. No. 328,747, Dec. 8, 1981, Pat. No. 4,492,556, which is a continuation of Ser. No. 951,609, Oct. 16, 1978, Pat. No. 4,303,544, which is a continuation-in-part of Ser. No. 705,996, Jul. 16, 1976, Pat. No. 4,120,086, which is a continuation-in-part of Ser. No. 516,618, Oct. 21, 1974, Pat. No. 3,970,821. This application May 17, 1984, Ser. No. 611,141
The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.
Int. Cl.[4] H05B *3/00*
U.S. Cl. 29—611 **8 Claims**



1. In a method of making an annular configured electric heater for supplying heat to a fluid melt stream of moldable material directed centrally through the heater comprising providing uncured strips of ceramic particles impregnated to a high density and bound together in a heat dissipatible binder material and each having a predetermined thickness, providing an electrical resistance wire having resistive properties such that when assembled in said heater and coupled to an electrical source said heater generates heat sufficient to maintain a melt stream directed through said heater in fluid condition, assembling said resistance wire between said uncured strips of ceramic particles, compressing said assembled uncured strips and resistance wire together to substantially eliminate air voids between said strips, containing said uncured strips and resistance wire between inner and outer metallic layers, heating said compressed strips and resistance wire while contained between said inner and outer metallic layers to a temperature sufficient to dissipate a substantial portion of said binder material with said ceramic particles remaining as a void-free compacted mass embedding said resistance wire, and prior to said heating, forming said uncured strips, resistance wire, and metallic layers into a desired annular configuration.

4,641,424
APPARATUS FOR FINISHING SLIDE FASTENER CHAIN WITH REINFORCING STRIP

Toshiaki Sodeno, Toyama; Keiichi Yoshieda, Kurobe, and Syuichi Honmoto, Uozu, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 13, 1985, Ser. No. 765,143
Claims priority, application Japan, Aug. 15, 1984, 59-124605[U]
Int. Cl.[4] A41H *37/06;* **B21D** *53/50*
U.S. Cl. 29—766 **8 Claims**

1. An apparatus for finishing a slide fastener chain composed of a pair of slide fastener stringers having coupling element rows and a reinforcing strip attached to the slide fastener stringers transversely across an element-free space and including a central excessive portion lying in the element-free space

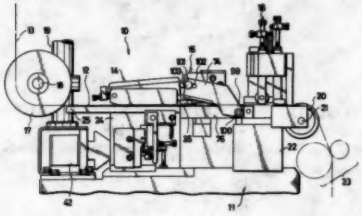
adjacent to endmost coupling elements of the coupling element rows, said apparatus comprising:

(a) a base;

(b) means defining a feed path on said base along which the slide fastener chain can be fed;

(c) a chain guide unit on said base and including means partly defining said feed path, said chain guide unit including a sensor for detecting the reinforcing strip and a stop movable transversely into said feed path in response to detection of said reinforcing strip by said sensor, said stop including steps for engaging said endmost coupling elements, respectively, to stop said slide fastener chain;

(d) a cutter unit on said base and including a cutter movable transversely into said feed path for cutting off said central excessive portion from said reinforcing strip in response to engagement of said steps with said endmost coupling elements, and a pair of pressure pads disposed one on each side of said cutter of resiliently holding said slide fastener stringers in advance of the cutting of said central excessive portion by said cutter; and



(e) a chain tensioner unit including a first support block on said base, a second support block vertically movably mounted on said first support block, a first vertical rod vertically slidably fitted in said second support block, a pressure gripper supported on a lower end of said first vertical block and movable transversely into said feed path for resiliently holding said slide fastener chain in response to engagement of said steps with said endmost coupling elements, a second vertical rod vertically slidably fitted in said second support block, a presser roller supported on a lower end of said second vertical rod, said pressure roller being disposed upstream of said pressure gripper and movable transversely into said feed path for tensioning said slide fastener chain in timed relation to said presser gripper to forcibly press said endmost coupling elements against said steps, said chain tensioner unit being positioned downstream of said cutter unit in the direction in which said slide fastener chain is fed along said feed path, whereby said reinforcing strip can be accurately positioned with respect to said cutter.

4,641,425

METHOD OF MAKING ALUMINA INTERCONNECTION SUBSTRATE FOR AN ELECTRONIC COMPONENT

Jacques Dubuisson, Paris; Pascal Le Gal, Magny Le Hongre, and René Boutterin, Montlhery, all of France, assignors to Interconnexions Ceramiques SA, Courbevoie, France

Division of Ser. No. 679,724, Dec. 10, 1984. This application Aug. 13, 1985, Ser. No. 765,087

Claims priority, application France, Dec. 8, 1983, 83 19689

Int. Cl.[4] H05K *3/36*

U.S. Cl. 29—830 **8 Claims**

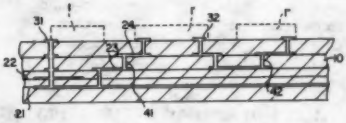
1. A method of manufacturing an interconnection substrate for electronic components formed by sintering a stack of sheets of dielectric material, at least some of said sheets having conductive patterns thereon, said substrate having conductive emerging portions for connecting the terminals of said component(s) with at least one internal sheet being provided with conductive tracks for providing interconnection between layers and with said emerging portions in accordance with a pre-established pattern, wherein the method comprises the steps of:

preparing a raw dielectric composition comprising 92% to 98% Al_2O_3 and a melting agent based on magnesia and titania having a composition corresponding to a ratio by weight of TiO_2 to MgO in the range of 1:0.5 to 1:6;

forming said raw dielectric composition into individual sheets of material;

making holes through said individual sheets by means of a high speed twist drill, or by means of a punch;

filling the holes with a first metallization ink, said ink comprising an organic vehicle, a free metal from the group



consisting of palladium and silver-palladium alloys, and Al_2O_3 in a concentration range of 2% to 5%;

silk screening the individual sheets with a deposit of a second metallization ink, said ink comprising an organic vehicle, a free metal from the group including palladium and silver-palladium alloys, the composition of said second metallization ink being substantially free of Al_2O_3;

stacking the individual sheets;

agglomerating the resulting block of sheets under heat and under pressure;

evacuating the organic vehicle from the inks; and

sintering the agglomerated sheets together by high temperature firing under an oxidizing atmosphere.

4,641,426

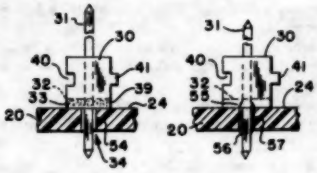
SURFACE MOUNT COMPATIBLE CONNECTOR SYSTEM WITH MECHANICAL INTEGRITY

John E. Hartman, Painesville, and John T. Venaleck, Madison, both of Ohio, assignors to Associated Enterprises, Inc., Painesville, Ohio

Filed Jun. 21, 1985, Ser. No. 747,343

Int. Cl.[4] H05K *3/30*; **H01R** *9/00*

U.S. Cl. 29—839 **31 Claims**



1. An electrical component for mechanical mounting and electrical connection with respect to plated through holes of a printed circuit board compatibly with a surface mount attaching process, comprising

an electrically non-conducting body, and

plural generally elongate contact means extending from said body for insertion into such plated through holes, and

said component having reservoir means for retaining solder type material for melting, for flow into respective plated through holes, and for re-solidifying to mechanically and electrically couple said component to such printed circuit board, and said reservoir means comprising a reservoir in said body.

22. A method for attaching an electrical component to a

printed circuit board compatibly with surface mount attaching processes, such printed circuit board having electrically conductive traces and plated through holes, such component having generally linearly extending contacts and a reservoir of solder type material, comprising

using automated equipment to position such component with respect to such printed circuit board and to insert linearly extending contacts of such component into respective plated through holes in such printed circuit board while positioning such reservoir of solder type material in proximity to such holes,

applying thermal energy to melt such solder type material to flow into such respective holes, and

allowing such solder type material to solidify to form a mechanical and electrical connection of respective contacts in respective plated through holes.

4,641,427

METHOD AND APPARATUS FOR APPLYING TWO PIECE CONNECTOR BLOCKS TO MULTICONDUCTOR CABLE

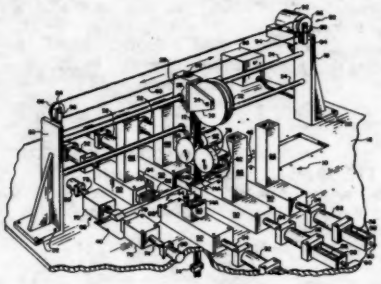
Charles E. Shields, 655 Woodland, Crystal Lake, Ill. 60014

Continuation of Ser. No. 351,595, Feb. 23, 1982, Pat. No. 4,580,340. This application Jul. 19, 1985, Ser. No. 756,503

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.[4] H01R *43/04*; B23P *19/00*

U.S. Cl. 29—857 **25 Claims**



1. A method of forming cable assemblies comprising:

advancing a cable vertically downward a first selected distance;

attaching a first connector to the cable;

feeding the cable vertically downward a second selected distance;

attaching a second connector to the cable;

feeding the cable vertically downward a third selected distance; and,

attaching a third connector to the cable.

14. An apparatus for automatically forming cable assemblies, each cable assembly including a selected length of cable with at least one connector attached thereto, the appartus comprising:

a cable supply support assembly mounted on a track member for translating movement therealong;

a cable supply means for storing and feeding cable therefrom, the cable supply means being mounted on the cable supply supporting assembly such that the cable feeds vertically downward therefrom;

a cable advancing means for advancing the cable vertically downward from the cable supply means, the cable advancing means being mounted on the cable supply support assembly vertically below the cable supply means;

a translating means for selectively translating said cable supply supporting assembly along the track member, the translating means being operatively connected with the track member;

a plurality of connector attaching means each operatively connected with the track member for attaching a selected type of connector to the cable, the connector attaching means being stationarily mounted in a generally horizontal array and vertically below the cable supply means and the cable advancing means such that translating the cable supply supporting assembly along the track member selectively positions the cable adjacent each of the connector attaching means; and,

control means for selectively causing the translating means to translate the cable supply supporting assembly to preselected positions along the track member such that the cable is selectively disposed adjacent a selected one of the connector attaching means, for controlling the advancing means for selectively controlling advancement of the cable, and for controlling the connector attaching means for selectively causing attachment of selected types of connectors at selected locations along the cable.

4,641,428

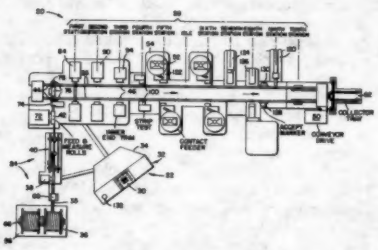
AUTOMATIC METHOD OF MAKING TERMINATED COAXIAL LEADS

James D. Anderson, Norwalk, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Oct. 4, 1985, Ser. No. 784,395

Int. Cl.[4] H01R *43/04*

U.S. Cl. 29—863 **20 Claims**



1. An automatic process for producing terminated coaxial cable jumpers in a predetermined quantity to predetermined lengths and with predetermined end styles comprising the steps of:

feeding coaxial cable having inner and outer condutors and inner and outer insulation from a reel in the direction of a free end so that it forms a U-shaped loop extending away from the free end;

measuring the length of the cable extending from the reel;

gripping the cable at a first location proximate to but spaced from the free end;

when a predetermined length of the cable has been reached, gripping the cable at a second location distant from the free end;

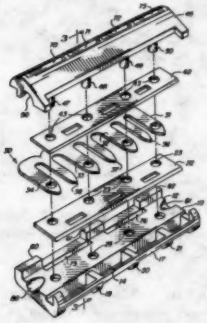
severing the cable from the spool at a location spaced from the second location in a direction away from the free end to thereby form a jumper of predetermined length;

stripping at least one end of the jumper to expose predetermined lengths of the inner conductor and the outer conductor thereof;

testing the stripped jumper to determine whether it meets preestablished standards; and

rejecting a jumper which fails to meet the preestablished standards.

4,641,429
RAZOR BLADE CARTRIDGE UNIT WITH DUAL BLADES
Michael R. Abatemarco, P.O. Box 17252, Fountain Hills, Ariz. 85268
Filed Dec. 24, 1984, Ser. No. 685,490
Int. Cl.[4] B26B *19/14*
U.S. Cl. 30—41 **9 Claims**



1. A disposable razor blade cartridge unit including in combination:

a base member having a front wall and a rear wall, with a guard portion spaced outwardly from the front wall to define a slot and having a blade support surface thereon;

a first planar blade located on the support surface of said base member and having a cutting edge located above the slot and extending parallel to said guard portion;

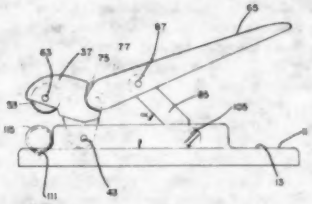
a second planar blade having a cutting edge spaced upwardly and rearwardly of the cutting edge of said first blade;

an elongated spacer between said first and second blades and having a plurality of forwardly extending fingers connected to a spine member to define a plurality of forwardly open channels therebetween, said spine member being spaced rearwardly of at least one of said blades;

a cap member located on said second blade and interconnected with said base member for clamping together said first blade, said spacer, and said second blade between said cap member and said base member in a permanent nonmoveable fixed relationship in the cartridge unit, said cap member and said base member having a plurality of aligned slots therethrough spaced rearwardly of the rear edge of said one of said blades and aligned with the channels between said fingers of said spacer at the ends of the channels where said fingers connect to said spine member to permit fluid flow therethrough in directions upwardly through the slots in said cap member and downward through the slots in said base member; and

at least two spaced-apart support pillars on said base member adjacent the rear wall thereof between said base member and said cap member to form at least one exit port between said base member and said cap member in communication with the channels between said fingers of said spacer, whereby shaving residue accumulating between said first and second blades may be passed through the channels between said fingers and out of the unit through the slots in said cap member and the exit port, while said blades and said spacer are in an operative assembled relationship.

4,641,430
NUT SPLITTER
Marlin D. Hahn, San Angelo, Tex., assignor to Texan Nut Sheller Pecan Company, San Angelo, Tex.
Filed Dec. 13, 1985, Ser. No. 808,646
Int. Cl.[4] A47J *43/26*
U.S. Cl. 30—120.5 **5 Claims**



1. A nut splitter, comprising:

a base for supporting the splitter upon a planar surface;

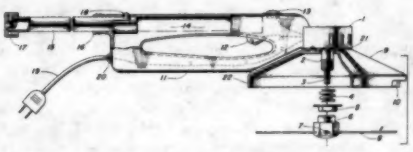
a jaw having a cutting wheel rotatably mounted thereon, the jaw being pivotally mounted on the base and being movable between an open position allowing placement of a nut on the base and a closed position in which the cutting wheel contacts the nut;

a lever arm having a pivot end which is pivotally attached to the jaw and an opposite length terminating in a free end which forms a handle for applying force to the jaw to move the jaw between the open and closed positions;

an elongate bar pivotally attached at one end to a point intermediate the pivot end and free end of the lever arm and having an opposite end which abuts a stop on the base, whereby the bar serves as a fulcrum point for the lever arm in applying force to the jaw; and

wherein the jaw has a cam region defined by an external sloping surface and wherein the lever arm has a mating cam surface comprising an external sloping surface on the pivot end thereof arranged to make rolling contact with the cam region of the jaw so that movement of the lever arm about the fulcrum point serves to move the cutting wheel into contact with the nut.

4,641,431
HEDGE TRIMMER
Anthony D. Leming, 414 W. Muskogee, Sulphur, Okla. 73086, and Luther C. Dawson, Rte. 1, Box 215H, Davis, Okla. 73030
Filed Nov. 18, 1985, Ser. No. 798,838
Int. Cl.[4] B26B *27/00*
U.S. Cl. 30—276 **13 Claims**



1. A hedge trimmer comprising in combination

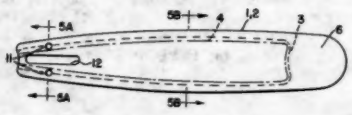
(a) a circular cutter guard having a lip projecting from the lower edge of said guard and extending around a major segment of the periphery of said guard with an opening extending along a minor segment of said periphery,

(b) a rotatable shaft extending through the center of said guard and opposite said lip,

(c) means for rotating said shaft at high revolutions per minute attached to said shaft above said guard, and further comprising

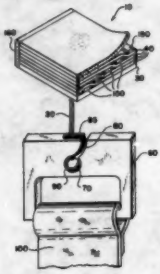
(d) means for providing selective positioning of said guard and said opening in said lip about said shaft as desired prior to use,
(e) a wire whip attached to said rotatable shaft within said lip and extending radially from said shaft toward said lip, and
(f) a handle and control means mounted above said guard on said rotating means, whereby the wire whip can be caused to rotate rapidly and cut hedge effectively.
3. A hedge trimmer comprising
(a) an electric motor in a housing for rapidly rotating
(b) a wire whip cutting element attached to
(c) a drive shaft on said motor,
(d) an attachment means mounted on the motor housing concentric with the drive shaft for holding
(e) a dish-shaped whip and chip guard to protect the operator, said guard adapted on its lower edge with a lip and an opening
(f) or slot therein to expose the whip to the hedge,
(g) a whip holder means, comprising a metal plug with drill holes and set screws, for attaching and holding the wire whip on the shaft of the motor at the lip of the guard,
(h) a hollow double-element handle attached to the side of the motor housing to provide hand grips and accomodations for
(i) switch means for controlling the motor,
(j) an opening and space at the back end of the top member of the handle for attaching and/or storing
(k) an extension handle for reaching high bushes,
(l) means for retaining a short extension handle in the storage space,
(m) other means for attaching and holding extension handles in the extended position, and
(n) means for admitting and retaining a power lead at the back end of the bottom member of the hollow handle.

4,641,432
CHAIN SAW GUIDE BAR AND METHOD OF CONSTRUCTION
Takeshi Kume, Amagasaki, Japan, assignor to Suehiro Seiko Kabushiki Kaisha, Miki City, Japan
Continuation of Ser. No. 467,156, Feb. 16, 1983, abandoned. This application Mar. 26, 1985, Ser. No. 716,329
Int. Cl.[4] B23D *57/02*
U.S. Cl. 30—383 **4 Claims**



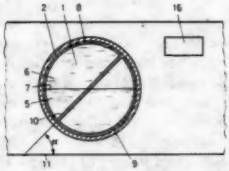
1. A guide bar for a chain saw, comprising two similar side plates and a center plate, said center plate and said side plates having peripheral edges and said side plates overlapping said edge of said center plate, portions of said center plate being flat against portions of said side plates, said center plate peripheral edge being spaced from the peripheral edges of the side plates over a substantial portion of the circumference of said center plate, said spacing forming a chain saw guide groove between the edges of the side plates and said center plate having a thickness that is substantially equal to the width of said guide groove, and a laser weld seam through said overlapping portions of said side and center plates closely adjacent said chain saw guide groove and the peripheral edge of said center plate, said seam forming a substantially continuous narrow weld seam substantially laterally through said side and center plates, said bar having a rearward mounting portion and a forward portion, and in said forward portion said center plate having an opening formed centrally thereof, said opening forming a band, and said laser weld seam extending through said band.

4,641,433
FASTENING SYSTEM
Peter Sing, 168-10 84th Ave., Jamaica Hil, N.Y. 11432
Filed Dec. 24, 1985, Ser. No. 813,063
Int. Cl.[4] G01B *3/10*
U.S. Cl. 33—137 R **15 Claims**



1. A fastening device for temporarily securing an end of an elongate member at a fixed position, comprising:
(a) a tape pad comprising:
(i) a support member;
(ii) a plurality of leaves, at least a portion of one side of each leaf being covered with an adhesive material to give each leaf an adhesive quality, the leaves stacked together to leave a first leaf exposed and affixed to the support member, so that the first leaf can be temporarily secured to a surface, and, if the adhesive quality of the first leaf deteriorates, the first leaf can be removed to expose a second leaf;
(b) a connecting member having a first free end, and a second end fastened to the support member; and
(c) means for affixing the first free end of the connecting member to a free end of the elongate member.

4,641,434
INCLINATION MEASURING DEVICE
Max Engler, Solothurnerstrasse 187, 4600 Olten, Switzerland
Continuation-in-part of Ser. No. 574,589, Jan. 27, 1984, abandoned. This application Oct. 3, 1985, Ser. No. 783,370
Claims priority, application Switzerland, Jan. 28, 1983, 502/83
Int. Cl.[4] G01C *9/06, 9/20*
U.S. Cl. 33—366 **4 Claims**

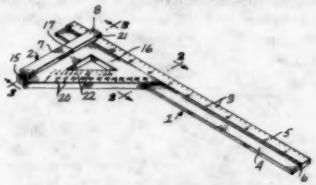


1. An inclination measuring instrument comprising a cylindrical chamber with two planar, parallel, radial end walls, a first of the end walls being plated with at least two condenser plates, the two plates defining a gap between them and being plated with a solid dielectric layer, and the chamber containing equal amounts, by volume, of two non-intermixing, non-intersoluble liquids of different specific gravity and different electrolytic properties.

4,641,435
COMBINATION SQUARE
Victor K. Brown, 1518 79th Ave. SE, Everett, Wash. 98205
Filed Oct. 31, 1985, Ser. No. 793,524
Int. Cl.[4] B43L *7/00*
U.S. Cl. 33—427 **6 Claims**

1. In a combination square for marking a line on the face of

a board having a linear edge, such square including an elongated rule having a straight longitudinal edge and a planar longitudinal marginal portion adjacent to such edge, a stock thicker than the rule and having a straight edge, and means for locking the stock at any location along the length of the rule with the stock extending perpendicular to the rule, the improvement comprising the stock including a pivot point engageable against the board edge for rotation of the stock and rule relative to the board edge about said pivot point with said



planar longitudinal marginal portion of the rule contiguously engaged against the board face, the stock further including a protractor portion having a flat face coplanar with the planar longitudinal marginal portion of the rule for contiguously engaging and steadying the stock as it is rotated and a scale of angle calibration markings indicating the angle of the rule relative to the board edge when said pivot point is engaged against the board edge with the rule longitudinal marginal portion contiguously engaged against the face of the board.

4,641,436

RULER

Ching B. Tzen, and Tzu P. Liang, both of No. 259, Chung Ming South Road, Taichung City, Taiwan

Filed Jun. 27, 1986, Ser. No. 879,626
Int. Cl.[4] G01B *3/02*
U.S. Cl. 33—483 **2 Claims**

1. An improved ruler comprising a multiplicity of identical vertical scales, a horizontal scale, two vertical slots which are positioned near the ends of said ruler, a horizontal slot which is positioned at the bottom end of said ruler adjacent to said horizontal scale, two horizontal alignment arrows having tips extending to the left and right edges of said ruler and which are collinear with said horizontal slots and two vertical alignment arrows having tips which extend to the top edge of said ruler and which are collinear to said vertical slot, said slots intersecting so as to form a square U-shaped slot.

4,641,437

GAUGE FOR COMPARING CIRCUMFERENCES

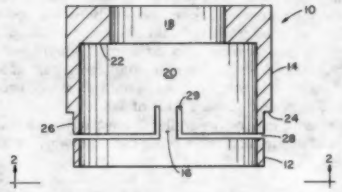
W. Coy Willis, Hagerstown, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 1, 1984, Ser. No. 667,131
Int. Cl.[4] G01B *3/34*; B07C *5/00*
U.S. Cl. 33—522 **14 Claims**

1. A gauge for comparing a circumferential length around an object with a specified circumferential length, the gauge comprising:

an endless substantially circular band having sufficient flexibility to be deformed out-of-round, and said band also having a specified inner circumferential length to be compared with a circumference around the object; and

means for supporting said band coaxially with the circumference of the object to be compared and which allows said band to flex and deform in circumscribing and uniformly contacting the circumference around the object to be



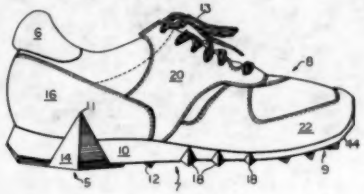
compared when the object and said band have axial movement relative to one another to accomplish such circumscribing and thereby establish whether the object circumference is within a specified length tolerance.

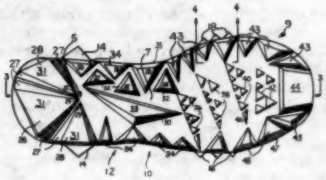
4,641,438

ATHLETIC SHOE FOR RUNNER AND JOGGERS

Bruce A. Laird, and Richard A. Laird, both of Box 169, R.D. #1, Northampton, Pa. 18067

Filed Nov. 15, 1984, Ser. No. 671,699
Int. Cl.[4] A43B *13/04, 13/00*
U.S. Cl. 36—59 C **13 Claims**

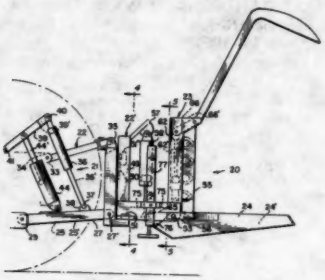




1. In an athletic shoe intended for runners having a body weight exceeding one hundred forty pounds having a shoe upper covering, an interior sole, a shoe upper, a heel counter and a toe end including a toe box, an elastomeric outer sole including a heel area, a midstance and a toe-off area and an outer sole outside edge and inside edge, the improvement comprising an outer sole formed of resilient material having thereon a plurality of triangular faced, slope sided, prism shaped, canted studs distributed circumferentially around and laterally and longitudinally thereon, said outer sole bottom in a predetermined configuration including three circumferential studs in the heel area and wherein said three heel studs are oriented and canted so that the apexes of each of their triangular faces converge proximate said heel areas' forward center and wherein said three heel studs are sized to substantially cover said heel area to maximize the displacement of impact force when a runner's heel touches the ground, said predetermined configuration also including three sets of studs in said midstance area, said first midstance area set comprising a single elongated, longitudinally disposed stud oriented to receive the

impact of the runner's foot when it touches ground in the pronation phase of impact, and wherein said longitudinal studs triangular face is canted toward the shoe's inside edge, said second midstance area set comprising three arch studs longitudinally disposed with respect to each other throughout said sole's arch area and interspersed between opposed facing, circumferential studs and said elongated studs, said arch studs being canted toward said adjacent circumferential opposed studs and said circumferential studs being canted toward adjacent arch studs, said third set of midstance studs comprising an alpha, beta and gamma row of lateral metatarsal studs, said rows being generally parallel to each other with said metatarsal stud's triangular faces being canted toward said sole outside edge.

4,641,439
ROCK DIGGING APPARATUS
Frank A. Shirek, Rte. #1, Box 65, Adams, N. Dak. 58210
Filed Feb. 25, 1985, Ser. No. 704,705
Int. Cl.[4] A01B *43/00*
U.S. Cl. 37—2 R **2 Claims**



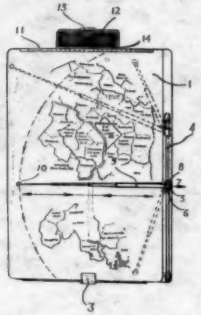
1. A load moving apparatus comprising a first frame, a second frame, a support frame having lugs at three points, said support frame being adapted to be pivotally mounted to a three point connection of a tractor having fluid actuated means to raise and lower the three point connection with respect to the tractor, said first frame having lug receiving means to detachably receive the lugs of the support frame, whereby actuation of the means to raise and lower the three point connection may detachably engage the support frame with the first frame to support the first frame thereon to raise and lower said first frame with respect to said tractor, said second frame being pivotally mounted to said first frame whereby raising and lowering of said first frame will raise and lower the second frame, a fluid actuated piston and cylinder means connected between said first and second frame which upon actuation acts to selectively pivot said second frame with respect to said first frame about said pivotal mounting, a plurality of load lifting spikes mounted to said second frame and projecting rearward therefrom, a pivotally mounted grapple on said second frame, a fluid actuated piston and cylinder means connected between said second frame and said grapple which upon actuation acts to selectively pivot said grapple on its pivotal mounting for encircling over a load once located on said spikes.

4,641,440
MAP HOLDER
Vladimir Agranov, 6036 Richmond Hwy. #204, Alexandria, Va. 22303
Filed Apr. 30, 1985, Ser. No. 729,064
Int. Cl.[4] G09F *3/18*
U.S. Cl. 40—10 A **4 Claims**

1. A map holder, comprising

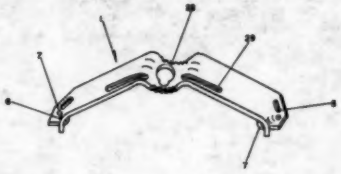
a bottom plate arranged to support a map and having two first sides spaced from one another and two second sides spaced from one another and extending transversely to said first sides, said bottom plate having also a predetermined plane;

an elongated pointing element having a pointing end and a connecting end spaced from one another in a direction of elongation of said pointing element, said pointing element being pivotable substantially in said plane of said bottom plate and about said connecting end so that during said pivoting of said pointing element said pointing end moves over a circumference with a center at said connecting end, said pointing element being also telescopically extendable and retractable in the direction of elongation of said pointing element from and toward said connecting end and radially of said circumference so that during said telescopical extension and retraction of said pointing element said pointing end moves over a radius of said circumference, whereby by said pivoting of said pivoting element about a center located at said connecting end and by said telescopic extension and retraction of said pivoting element from and toward said connecting end said pointing end of said pointing element can reach and point to any point on a map supported by said bottom plate; and



means for connecting said connecting end of said pointing element pivotally with said bottom plate.

4,641,441
FRAME RETAINING CLIP
Robert B. Roth, 519 E. 86th St., New York, N.Y. 10025
Filed Feb. 21, 1984, Ser. No. 582,561
Int. Cl.[4] A47G *1/06*; G09F *1/12*
U.S. Cl. 40—156 **6 Claims**



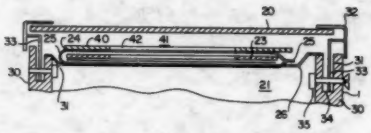
1. An improved picture frame retaining clip comprising a resilient strip with a flat central portion and said flat central portion having a bent end on each side of the central portion, each bent end is bent away from the central portion in the same direction and to the same degree of bending and in addition each bent end is offset from the central portion with said offset in the opposit direction of the bend of each end.

4,641,442

DISPLAY UNITS

Alan M. Filmer, Auckland, New Zealand, assignor to Development Finance Corporation of New Zealand, Limited, Auckland, New Zealand

Filed Jun. 12, 1985, Ser. No. 743,919
Int. Cl.[4] G09F *13/12*
U.S. Cl. 40—219 5 Claims



1. A display unit comprising a light box containing a series of light units, one surface of said light box comprising a sheet of material which in use will transmit light from the interior of the light box outwardly, but which gives a darkened glass effect when light is directed towards the sheet of material from exterior of the light box, indicia bearing means including translucent and masked areas mounted within the light box, the construction and arrangement being such that on the light source within said light box being illuminated, said indicia will be displayed through said sheet of material and when said light box is not illuminated, said sheet of material will give a darkened glass effect wherein said masked areas have a reflective surface and said sheet material has a reflective surface both said reflective surfaces defining walls of a space between them, giving a multi image view of indicia when illuminated.

4,641,443

IDENTIFICATION CARRIER FOR ELECTRIC LINES

Manfred Wilmes, Detmold, Fed. Rep. of Germany, assignor to C. A. Weidmuller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,464
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1983, 3343064
Int. Cl.[4] G09F *3/00*
U.S. Cl. 40—316 9 Claims

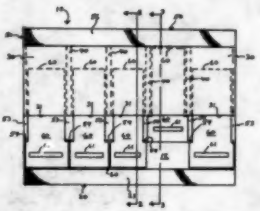
1. In an identification carrier intended for an electrical line having a two-winged sleeve-like body that surrounds the line and has a projection on one face and an accommodation for the projection on an opposite face, the improvement wherein the body of the carrier has a clip closure and has clamping elements displaceable by a line when a clip closure is closed around the line and wherein the projection and its accommodation comprise a snap-in connection, whereby the identification carrier can be used for lines having differing diameters.

4,641,444

LINE VIEWER

Robert G. Signor, 525 Herr's Ridge Rd., Gettysburg, Pa. 17325

Filed Apr. 26, 1985, Ser. No. 727,522
Int. Cl.[4] B41J *11/64*
U.S. Cl. 40—352 15 Claims



1. A limited line viewer assembly comprising:
a plurality of slide assemblies (60) arranged in a ruler structure,
said slide assemblies (60) being slideable in passages formed by upper walls (30), lateral walls (40) and bottom walls (50),
said limited line viewer assembly further comprising a front wall (20),
means for sliding said slide assemblies (60) into adjacent relation to said front wall (20) to provide means for closing an aperture (12) formed between said front wall (20) and said bottom walls (50),
means for sliding said slide assemblies (60) away from said front wall (20) to provide means for opening an aperture (12) formed between said front wall (20) and said bottom wall (50),
means whereby data may be viewed through said aperture (12) such that said data is viewed within the confines of the limited line viewer assembly,
means whereby some of the plural slide assemblies (60) may be open and some may be closed so that only desired data is viewed within the confines of the limited line viewer assembly,
wherein said slide assemblies (60) have securing tabs (62) mounted on a lower surface thereof and means whereby said tabs (62) abut a leading edge (54) of said bottom wall (50) in the closed position of the slide assembly and means whereby said securing tabs (62) rest in a securing notch (55) formed in the upper surface of said bottom wall (50) in the open position of the slide assembly,
wherein said slide assemblies (60) rest entirely on said bottom wall means (50) in an open position of the device and wherein said slide assemblies (60) extend over an edge (54) of said bottom wall means (50) in a closed position of the device.

4,641,445

NOVELTY DISPLAY DEVICE

Frank R. Rossi, 8830 Trinity, Detroit, Mich. 48228

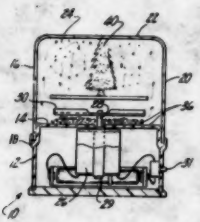
Filed Aug. 22, 1985, Ser. No. 768,067
Int. Cl.[4] G09F *19/00*
U.S. Cl. 40—410 6 Claims

1. A display device comprising:
a base having a top,
a container positioned on said base top, said container being constructed of a transparent material and forming a substantially closed and air containing chamber,
a fan blade contained within said chamber adjacent the bottom of said chamber,
means for rotatably driving said fan blade, and
light weight particulate matter contained within said chamber so that, upon rotation of said fan blade, said fan blade

circulates said particulate matter through said air within said chamber thereby simulating a snowfall,

a display figure secured to said rotatable driving means,

wherein said display figure has two sides and comprising letter indicia on both sides of said display figure, said letter indicia being such that the letter indicia on both sides of



said display figure together form at least one recognizable word while the letter indicia on a single side of said display figure does not form a recognizable word

wherein said rotatable driving means alternately displays said sides of said display figure at a sufficiently high speed to form a recognizable word.

4,641,446

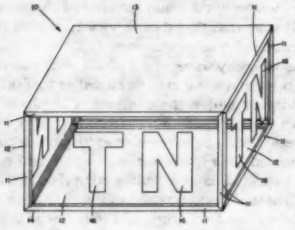
APPARATUS AND METHOD FOR PRODUCING A MULTISIDED, MULTICOLORED DISPLAY

Thomas L. Jackson, 2222 Cass St., Fort Wayne, Ind. 46808

Filed Mar. 11, 1985, Ser. No. 710,329

Int. Cl.[4] G09F *13/00*

U.S. Cl. 40—444 **7 Claims**



1. An apparatus for producing a multisided display, comprising:

a plurality of modules, said modules being positioned in a matrix structure; each said module being an enclosure having at least one exposed light scattering sides;

means for illuminating said sides, including a plurality of common sources of different colored light;

a plurality of symbols;

means for positioning said symbols between said illuminating means and said light scattering sides; said modules being positioned in a matrix structure.

4,641,447

CONCEALED INVENTORY CONTROL DEVICE

Edward R. Tausevich, 67 Bramblewood La., Braintree, Mass. 02184

Filed Feb. 27, 1985, Ser. No. 706,177

Int. Cl.[4] G09F *19/00*

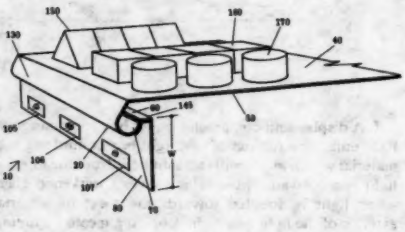
U.S. Cl. 40—530 **10 Claims**

1. A concealed inventory control device for readily identifying and accounting for objects arranged in sequential front to back and side to side alignment comprising:

means for readily identifying said objects arranged in front to back and side to side alignment on a means for supporting the objects;

means for concealing the means for readily identifying, comprising a lip means extending downwardly from the forward edge of the means for supporting;

means for moving the means for readily identifying between a first viewable position and a second non-viewable position, the means for moving comprising a hinge and a means for attaching the hinge to the means for readily identifying and the means for supporting or the means for



concealing, the hinge being selected from the group consisting of flexibly resilient material and pin and aperture means; and,

means for holding the means for readily identifying in the second non-viewable position;

wherein the means for readily identifying comprises a lip means extending downwardly from the forward edge of the means for supporting and wherein the hinge is attached to the means for concealing in substantially parallel arrangement to the forward edge of the means for supporting.

4,641,448

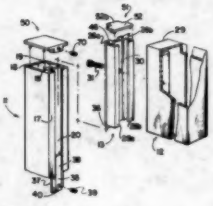
POST CAP APPARATUS

Ronald W. Cobb, Covington; Charles A. Lollis, Mableton, both of Ga., and Nancy S. Crane, Warrior, Ala., assignors to Apco Graphics, Inc., Atlanta, Ga.

Filed Jan. 18, 1985, Ser. No. 693,006

Int. Cl.[4] G09F *15/00*

U.S. Cl. 40—606 **8 Claims**



6. In a sign including a hollow post having an open free end, an elongated channel on a side of the post and having an open end adjacent the open end of the post, and an elongated open slot extending between the elongated channel and the exterior of the post, the improvement comprising:

a sign support member received in said channel at a predetermined location spaced longitudinally inwardly from the open end of the channel so as to leave a terminal longitudinal portion of the channel unoccupied, said support member having means extending through said slot for operative association with a message display;

said sign support member having an open end facing the same direction as said open ends of the post and the channel, but displaced longitudinally inwardly therefrom;

a support member cap fitting into and closing said open end of the sign support member, so as to render the open end of the sign support member substantially invisible;

a post cap fitting on and closing said open end of the post, said post cap having an edge located adjacent said open end of the elongated channel;

said post cap having a flange extending longitudinally from said edge into the open end of the channel to contact and retain said support member cap in said open end; and

means operatively associated with said post cap for selective engagement with said post so as to secure the post cap to the post,

whereby the secured post cap retains said support member cap in place and thereby prevents removal of said sign support member from the post.

4,641,449

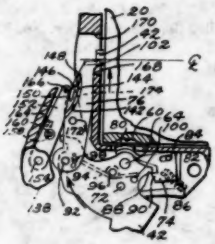
ANTI-LOCK UP MECHANISM FOR REVOLVERS

Mitchell A. Kapland, Annapolis, Md.; Kiyoshi Norikane, Park Forest, Ill., and Jack W. London, Austin, Tex., assignors to Trident Engineering, Inc., Annapolis, Md.

Filed Nov. 19, 1984, Ser. No. 672,924

Int. Cl.⁴ F41C *1/00, 17/08*

U.S. Cl. 42—65 **6 Claims**



1. In a hand gun including a frame having a hand grip, a barrel extending outwardly from said frame and having an axis, a cylinder mounted on said frame for indexed step-by-step rotational movement about an axis parallel to the axis of said barrel, said cylinder having a series of cartridge chambers disposed in annularly spaced relation about the axis of said cylinder in positions to be successively axially aligned with said barrel in successive indexed step-by-step rotational movements thereof, a hammer pivotally mounted on said frame for movement between a cocked position and a firing position toward which it is spring urged, a cylinder stop mounted on said frame for movement between a cylinder locking position toward which said cylinder stop is spring urged and a cylinder releasing position, said cylinder having a plurality of indexing ratchet teeth thereon, a hand having an end spring urged to engage successive ratchet teeth, a trigger pivotally mounted on said frame for manual movement from a forward position into a rearward position through a firing stroke including a relatively large cocking segment and a relatively small firing segment and for spring urged movement from said rearward position into said forward position through a return stroke including a first segment corresponding to said firing segment and a second segment corresponding to said cocking segment, said trigger having (1) an engagable and disengagable connection with said cylinder stop, (2) a pivotal connection with said hand and (3) an engagable and releasable connection with said hammer such that when (A) said trigger is moved through the cocking segment of its firing stroke (1) said cylinder stop is engagingly moved into its cylinder releasing position and then disengaged for spring urged movement into its cylinder locking position in response to the completion of the next indexed movement of said cylinder (2) said hand is moved to engage the end thereof with a ratchet tooth after said cylinder stop has been moved into the cylinder releasing position so as to effect movement of said cylinder through its next indexed movement and (3) said hammer is moved into its cocked position and (B) when said trigger is subsequently moved through the firing segment of its firing stroke said hammer is released for spring urged movement from its cocked position into its firing position to discharge a cartridge in the cartridge chamber aligned with said barrel, said hammer having a thumb engaging spur by which said hammer can be (A) manually moved into its cocked position so as to cause the trigger to move therewith through the cocking segment of its firing stroke and (B) manually moved back into a battery position adjacent its firing position so as to allow said trigger to be spring urged for movement through the second segment of the return stroke which if manually controlled until after the hammer has been returned under manual control to its battery position results in a manually controlled movement of the trigger through the second segment of its return stroke so as to cause the following three functions to occur (1) movement of said hand into a position to engage the end thereof with the next ratchet tooth, (2) engagement of said trigger with said cylinder stop while the latter is in its locked position and (3) engagement of said trigger with said hammer, the improvement which comprises means for insuring that during a manually controlled movement of the trigger through the second segment of the return stroke following a manual hammer movement back into its battery position function (1) will occur after function (2) so that said trigger can be manually moved into its rearward position from any position within the manually controlled second segment of the return stroke of said trigger thus preventing the trigger from being locked against such movement as would be the case when function (1) occurs before function (2) and the manual movement of the trigger toward its rearward position is commenced after function (1) has been accomplished and before function (2) has been accomplished.

4,641,450

TUBE HAVING STRAIN-HARDENED INSIDE COATING

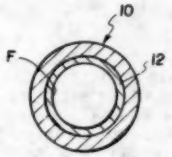
Eberhard Moll, Schellenberg, Liechtenstein; Marcel Lardon, Maienfeld, and Edgar Müller, Salez, both of Switzerland, assignors to Balzers Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 18, 1985, Ser. No. 724,990

Claims priority, application Switzerland, Apr. 19, 1984, 1969/84

Int. Cl.⁴ F41C *21/02, 21/04;* **F41F** *17/08*

U.S. Cl. 42—76.02 **5 Claims**



4. A method of manufacturing a tube having an interior layer with an inner surface comprising:

providing a tube member having an inner tubular surface;

applying an interior layer on the inner tubular surface, the interior layer being made of material which is harder than that of said tube member; and

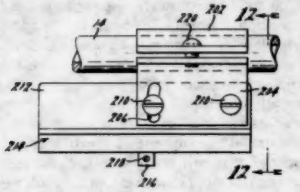
strain hardening the tube by reducing the area of the inner surface of the interior layer by a factor of at least $\Delta F/F = 1 \times 10^{-3}$ where ΔF is the amount of reduction of the area of the inside surface of the interior layer and F is the total area of the inner surface of the interior layer.

4,641,451

BIPOD MOUNTING DEVICE AND MUZZLE BRAKE

Gerald Harris, Rte. 1, P.O. Box 33, Barlow, Ky. 42024

Division of Ser. No. 367,544, Apr. 12, 1982, Pat. No. 4,470,216.
This application Sep. 11, 1984, Ser. No. 649,525
Int. Cl.[4] F41C *29/00*
U.S. Cl. 42—85 4 Claims



1. An apparatus for attaching a bipod to a firearm, said apparatus comprising:

a base having a mounting plate, a mounting bracket on the bottom edge of said mounting plate extending generally transversely thereto, and a mounting lug extending downwardly from said mounting bracket, said mounting bracket and mounting plate being generally inverted T-shaped in cross section with said mounting bracket having upturned lateral edge portions;

mounting means for attaching said base to a firearm, said mounting means having a mounting flange longitudinally angularly adjustably attached to said mounting plate, said mounting plate and said mounting flange being in parallel engaging relationship and selectively adjustably attached to each other by means of a pair of fasteners, one of said pair of fasteners extending through an arcuate aperture in one of said mounting plate and said mounting flange, said arcuate aperture being positioned to allow longitudinally angular adjustment of said mounting plate with respect to said mounting flange, said mounting flange extending from a split sleeve portion of said means for attaching said base to a firearm, said split sleeve portion having a longitudinal inner bore for clampingly receiving a barrel of a firearm and said split sleeve portion exerting clamping force in a direction substantially parallel to the plane of said mounting flange.

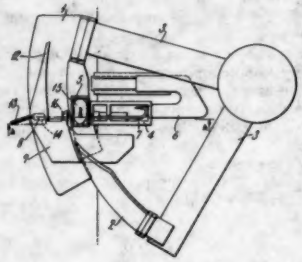
4,641,452

APPARATUS FOR HOOKING AND POSSIBLY BAITING OF A FISHING LINE

Kolbjorn Bjorshol, N-6560 Langoyneset, Norway

PCT No. PCT/NO85/00044, § 371 Date Mar. 19, 1986, § 102(e) Date Mar. 19, 1986, PCT Pub. No. WO86/00783, PCT Pub. Date Feb. 13, 1986
PCT Filed Jul. 26, 1985, Ser. No. 851,138
Claims priority, application Norway, Jul. 30, 1984, 843059
Int. Cl.[4] A01K *83/00, 91/04*
U.S. Cl. 43—4 11 Claims

1. An apparatus for hooking and possibly baiting of a fishing line provided with snoods, each snood having a head adapted to be releasably connected to the neck of a fishing hook, comprising a hook magazine for placing hooks in a stack, a pusher for moving the hooks into engagement with respective snood heads, a stationary retainer element (9) and a cooperating movable retainer element (1) for retaining snood heads (8) and for connecting them to hook necks, and a drive mechanism for moving the movable retainer element in order to release the



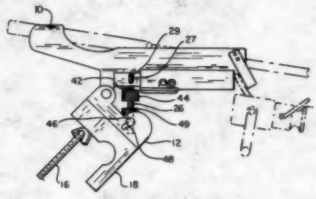
snood heads after the pusher (6) has moved the hook necks into engagement with the respective snood heads.

4,641,453

FISHING ROD HOLDER HAVING INTEGRAL ALARM AND MOUNTING STRUCTURE

Joseph M. Roberts, Sr., P.O. Box 2383, Alameda, Calif. 94501

Filed Sep. 18, 1985, Ser. No. 777,095
Int. Cl.[4] A01K *77/12*
U.S. Cl. 43—17 6 Claims



1. A fishing rod holder comprising

a holster portion for receiving and holding a rod,

alarm means integral with said holster portion and including a switch which is actuated by pivoting of said holster portion on a mount means in response to the pull of a fish,

mount means including a mount member pivotally attached to said holster portion, a first bolt extending from said mount member, and bracket means engaging said first bolt, a second bolt, said second bolt extending into said alarm means and engaging said switch upon pivoting of said holster portion and,

spring means positioned about said second bolt and engaging said alarm means for yieldably separating said second bolt and said switch and thereby adjusting force required to actuate said alarm means.

4,641,454

PROTECTIVE SOCK FOR ROD AND REEL

Douglas M. Ray, 7416 NE. 69th St., Vancouver, Wash. 98662, and Richard H. Weihl, 6209 NE. 70th St., Vancouver, Wash. 98661

Filed Aug. 9, 1985, Ser. No. 764,086
Int. Cl.[4] A01K *97/08*
U.S. Cl. 43—26 5 Claims

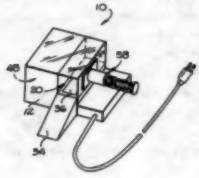
1. A protective sock for enclosing a bundle comprising a fishing reel mounted to the handle end of a fishing rod, and a plurality of rod segments, said sock comprising a substantially cylindrical sleeve having ends at least equal in diameter constructed of an outer layer of waterproof material and an inner layer of nonabrasive material, and including a pair of constrict-

ing tape means disposed at opposite ends of said cylindrical sleeve, each one of said constricting tape means having cooperatively mating closure means for closing each end snugly about said bundle, thereby enclosing the fishing reel within the sleeve.

4,641,455
SONIC FISHING BAIT
Carl T. Johnson, 5716 Abbott Ave. South, Minneapolis, Minn. 55410
Filed Sep. 19, 1985, Ser. No. 777,920
Int. Cl.[4] A01K *85/01*
U.S. Cl. 43—42.13 **7 Claims**

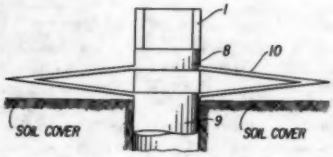
1. A fishing bait comprising a hook portion and a shank portion, said shank portion having upper and lower protuberances and an arcuate part projecting out from the longitudinal axis of the shank portion between the protuberances, said protberances and arcuate part being fixedly secured to, or integral with, said shank portion, a vane pivotally secured at one end thereof to said arcuate part between the protuberances and free to pivotally move from engagement with one protuberance into engagement with the other protuberance so that when said bait is used for jigging by moving it up and down the vane alternately engages the probuterances to produce sound waves, said vane having at least one aperture therethrough in the portion of the vane extending beyond the protuberances to allow water to pass through the vane to increase the ease with which the vane can move back and forth between the protuberances and hence to affect the frequency of the sound waves.

4,641,456
MOUSE TRAP
Robert Boharski, 7914 W. 92nd St., Hickory Hills, Ill. 60457
Filed Jan. 14, 1985, Ser. No. 691,206
Int. Cl.[4] A01M *1/12*
U.S. Cl. 43—73 **4 Claims**



1. A mouse trap comprising,
a housing defining an entrance space having a longitudinal direction and having an opening to the exterior to enable a mouse from the exterior to walk thereinto,
the housing having a pit on one side of and immediately adjacent the entrance space,
a pusher including a plate positioned with the plate on the other side of and immediately adjacent the entrance space,
spaced control elements in the entrance space positioned so as to enable them to be bridged in response to a mouse entering the entrance space, and the control elements being operable in response to being so bridged for actuating the pusher,
the housing also including a trap door normally closing the entrance space to the pit, but yielding in response to a mouse being pushed thereagainst and enabling a mouse to be thereby pushed into the pit, and the trap door thereafter re-assuming a closed position trapping the mouse in the pit, and the housing thereby being capable of so trapping the mouse in live condition,
circuitry including an electric valve having a control gate in series with the solenoid and operable for normally holding the solenoid inactive, and
the circuitry also including said control gate in series with said control elements and with the electrical source and the mouse upon touching the control elements completes circuit through the control elements and gate and the electrical source, and thereby completes circuit through the electric valve and energizes the solenoid.

4,641,457
PLANTING SYSTEM
Nils H. Sandin, Landskronavägen 30, Dösjebro, Sweden (240 23)
Continuation of Ser. No. 387,879, Jun. 3, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,409
Claims priority, application Sweden, Oct. 30, 1980, 8007634
Int. Cl.[4] A01G *7/00*; A01C *11/02*
U.S. Cl. 47—9 **10 Claims**



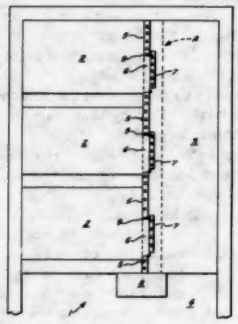
1. A device used to contain a plant for planting in soil, comprising a sleeve having a wall formed with cutouts extending in the longitudinal direction of the sleeve between a circumferentially extending upper part and a lower end integrally formed with the wall of the sleeve, the lower end being formed open to facilitate penetration of the sleeve into the soil, said sleeve being sufficiently rigid so as to be driven substantially completely into the soil without breaking; and
further comprising an anchoring device including an upper edge part and a lower edge part connected together by plural strips extending in the longitudinal direction, said strips having plural kerfs formed in a plane lying transverse to the strips, said anchoring device adapted to surround the sleeve so that the lower edge part of the anchoring device during planting is pressed upwards as a force is applied to press the sleeve downwards into the soil, and the lower edge part causing the strips to buckle and fold toward each other about the kerfs so that the folded strips overlie a soil cover and thereby retain the cover on the soil.

4,641,458

JAIL DOOR OPERATING AND LOCKING MECHANISM

Walter R. Pilcher, and James W. Pilcher, both of 1044 O'Neal La., Baton Rouge, La. 70816

Filed Nov. 1, 1985, Ser. No. 794,310
Int. Cl.[4] E05B *53/00*
U.S. Cl. 49—20 16 Claims



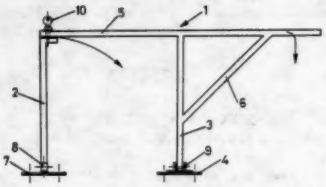
1. A jail door operating and locking mechanism, comprising:
a. at least one fixed frame across the front of a plurality of aligned jail cells and having a plurality of passageways therethrough;
b. a plurality of sliding cell doors, each said door slidingly movable across one said passageway;
c. a plurality of door carriage weldment means, each fixedly connected to each said cell door, for imparting sliding movement to said cell doors between open and closed positions;
d. a plurality of vertical lock bars, slidingly positioned in said frame such that at least one said lock bar is provided for each said door, each said lock bar having a locked position whereby said cell door is locked with relation to said frame, and an unlocked position, whereby said cell door is free to travel between said open and closed positions;
e. a plurality of means, each positioned over each said cell door, for transferring motive power to each said door carriage weldment means;
f. a plurality of lock bar positioner means, each fixedly attached to said means for transferring motive power and operatively connected to at least one said vertical lock bar, for moving said lock bar between said locked and unlocked positions;
g. a plurality of power means, for propelling said means for transferring motive power, each said power means operatively engageable with one said means for transferring motive power and operable from a remote location;
h. a continuous bar means, slidingly positioned above said doors, for manually operating said lock bar positioner means and said means for transferring motive power; and
i. a plurality of means for activating manual door operation, each operable from a remote location and selectively and linkingly engageable with said continuous bar means and one said means for transferring motive power such that movement of said continuous bar means will operate a desired number of said means for transferring motive power.

4,641,459

PARKING SPACE BLOCKING DEVICE

Jesus G. Mesa, Cadiz, Spain, assignor to Progesco, S.A., Cadiz, Spain

Filed Mar. 5, 1986, Ser. No. 836,436
Claims priority, application Spain, Mar. 25, 1985, 285.601
Int. Cl.[4] E01F *13/00*
U.S. Cl. 49—35 3 Claims



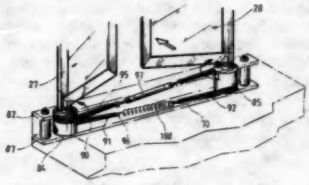
1. A device to block car parking spaces, comprising a collapsible gate and a collapsible anchoring post; the gate and post being pivotally jointed at their bases about two perpendicular and independent axes to base plates or footings affixed to the ground; the gate comprising a flat structure including at least one pole and a crossbar mutually perpendicular to each other, with said pole pivotally jointed at its bottom end to one of said base plates, while its top end is affixed to the crossbar which extends in a postion parallel to the jointing axis of said pole and is of such length as to rest with one of its ends on the free end of said post when said post and said gate are in a vertical position; and a blocking lock on mutual points of support of said crossbar and post.

4,641,460

SEMI-MANUALLY OPERATED SERVICE WINDOW

Carl P. Kriegel, Houston, Tex., assignor to M.C.E. Window, Inc., Houston, Tex.

Filed Jun. 24, 1986, Ser. No. 878,293
Int. Cl.[4] E05C *7/06*
U.S. Cl. 49—115 22 Claims



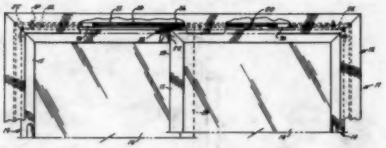
1. An access window comprising:
(a) at least one hinged window member;
(b) a rotor member operatively coupled to said window member; and
(c) a flexible linkage operatively coupling said rotor member to a fixed or rotational support such that a relatively slight rotational movement of said window member from a fixed position causes said flexible linkage and said rotor to swing said window member along a relatively long arcuate path compared to the distance covered by said slight rotational movement;
said rotor equipped with at least one circumferential groove, said groove being capable of accommodating said flexible linkage, the radial distance between the outer surface of a portion of said groove and the center of said rotor exceeding the radial distance between the outer surface of another portion of said groove and the center of said rotor.

4,641,461

SLIDING DOOR ASSEMBLY

Francis M. Niekrasz, Palos Park; Melvin C. Kasper, La Grange Park, and Gerald J. Bockwinkel, Mundelein, all of Ill., assignors to Ardco, Inc., Chicago, Ill.

Filed Feb. 22, 1985, Ser. No. 704,395
Int. Cl.[4] E05D *15/06*
U.S. Cl. 49—404 **5 Claims**



1. A door assembly for mounting in the opening of a wall, comprising a stationary door frame, at least one movable door mounted within said frame for translational movement between a fully closed position and an open position, said frame comprising an outer frame member having a mounting flange for mounting on an end face of said wall opening and a vertical flange for positioning on one side of said wall, an inner frame member adapted for telescopic and adjustable mounting within said outer frame member and having a mounting flange positionable in close fitting relation to the mounting flange of said outer member and a vertical flange positionable adjacent a side of said wall opposite the side the vertical flange of said outer frame member is positioned, the bottom portion of said inner frame member having means for supporting said door for relative movement, self-moving means for said door including a flexible tubular member, means for affixing one end of said tubular member to said inner frame member, a follower secured to the other end of said tubular member for loose positioning in an active position adjacent a side of said door for urging said door in one direction of movement and follower retaining means mounted on the upper portion of said inner frame member, said follower being selectively removable from said active position adjacent the side of said door and manually positionable in an inactive position in said retaining means for permitting removal of said door from said frame without disassembly of said self-moving mechanism or removal thereof from said frame.

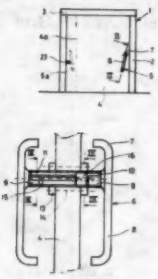
4,641,462

DEVICE FOR OPENING AND CLOSING A SLIDING-DOOR

Jan J. G. Markus, Griendstraat 11, Krimpen aan den Ijssel, Netherlands

Filed Apr. 11, 1985, Ser. No. 721,967
Claims priority, application Netherlands, Apr. 26, 1984, 8401339
Int. Cl.[4] E05B *1/00, 7/00*
U.S. Cl. 49—460 **11 Claims**

1. A device for opening and closing a sliding-door slidable between a final open position and a final closed position in a door-frame having two horizontally spaced-apart vertical posts, in particular for a sliding-door of the type wherein rollers by which the door is carried sink into recesses in a guide-rail when the door is in front of a doorway in a wall so that the door is moved towards the wall, and, when opening, the door has to be lifted to bring the rollers onto a carrying surface of the guide-rail, said device comprising: at least one lever rotatable with a rotation shaft and having two arms, one arm of which is provided with a push-off cam and the other arm of which forms an operating handle, the rotation shaft of the lever being supported in the door in such a manner that, when the door has almost reached either of said final open or said final closed positions, the lever can assume a position which is inclined in respect of a vertical line, so that the operating handle will be at a larger distance from an immediately adjacent one of the posts of the door-frame than the rotation shaft of the lever when the door has almost reached a final position; a cylindrical sleeve fixed in the door, in which sleeve a part connected with the lever is rotatably mounted; means for limiting the angle of rotation of the lever with respect to the sleeve so that the lever may assume two extreme lever positions; and annular element mounted in the cylindrical sleeve and comprising an outer and an inner casing which are not rotatable with respect to the sleeve and the levers, respectively; and flexible elements mounted between these casings in such a manner that the lever is biased to that lever position which the lever assumes when the door is closed.

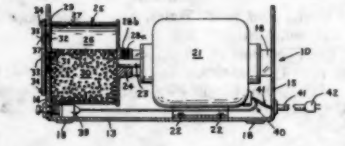


4,641,463

KEY DEBURRING AND POLISHING ASSEMBLY

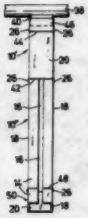
Eric L. Bianco, 448 W. Second Ave., Roselle, N.J. 07203

Filed Mar. 22, 1985, Ser. No. 714,983
Int. Cl.[4] B24B *31/02*
U.S. Cl. 51—7 **15 Claims**



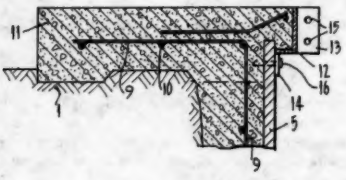
1. A key deburring and polishing assembly comprising,
a. frame means,
b. driving means in said frame means having rotatable shaft extending therefrom,
c. a cylindrical drum defining a deburring and polishing chamber having, an opening at one end and means at an end remote therefrom for fixedly connecting the cylindrical container to the rotatable shaft of the driving means for rotation therewith,
d. abrading material disposed in the deburring and polishing chamber of said cylindrical container,
e. an end plate on said frame means disposed for spaced and operative association with the open end of the cylindrical container to prevent said abading material from escaping when the cylindrical container is being rotated,
f. said end plate having, a slot therethrough to permit a key to be inserted for contact with the abrading material in the cylindrical container when the container is rotated by the driving means, and
g. securing means on an outer wall of the end plate, removably securing the key within the slot and cooperating with said slot to permit a portion of said key to extend into the cylindrical drum.

4,641,464
DOWNPIPE
Karl G. Andersson, deceased, late of Risögrund, Sweden (by Marianne Berglund, heir), and Bengt Paulsson, Järnforsen, Sweden, assignors to AB Siba-Verken, Jarnforsen, Sweden
Filed Mar. 12, 1985, Ser. No. 711,004
Claims priority, application Sweden, Mar. 12, 1984, 8401359; May 25, 1984, 8402832
Int. Cl.[4] E04D 13/08
U.S. Cl. 52—16 12 Claims



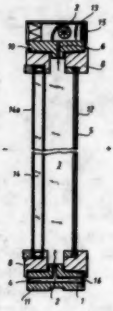
1. A downpipe, connectable to guttering on the outsides of building structures, comprising:
at least an upper tubular section and a lower tubular section, each section having a front side including an open longitudinally extending slot and a solid rear side disposed opposite said front side; and
a longitudinal joint between said upper and lower sections produced by slightly compressing the upper section and inserting it in the lower section, the front side of said upper section being disposed adjacent the rear side of the lower section at said joint.

4,641,465
POOL CONSTRUCTION AND PANEL SUPPORT MEMBER
Michael Boyle, New South Wales, Australia, assignor to Arabella Limited, Australia
Filed Feb. 28, 1985, Ser. No. 706,570
Claims priority, application Australia, Feb. 29, 1984, PG3843
Int. Cl.[4] E04G 17/02, 21/00
U.S. Cl. 52—127.1 4 Claims



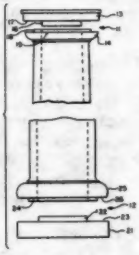
4. A panel support member for use in a method of constructing an overhanging concrete edge and an in-ground concrete pool, said support member comprising:
an angle section with two arms,
depending lugs extending at right angles from an edge of one arm of the angle section in a direction opposite to the extent of the other arm thereof,
a transverse lug extending from an end of said other arm transversely to the extent of both arms and in a direction opposite to the extent of said one arm, and
said angle section having respective bores in said depending lugs and said transverse lug for receiving bolts therethrough.

4,641,466
WINDOW
Jaakko Raninen; Heikki Savioja, both of Alavus; Antti Koivula, Sulkavankyla; Jorma Saariaho, Alavus; Reijo Sihto, Alavus, and Yrjo Valimaki, Alavus, all of Finland, assignors to Oy Partek Ab, Parainen, Finland
Filed May 8, 1985, Ser. No. 751,439
Int. Cl.[4] E06B 7/12
U.S. Cl. 52—171 9 Claims



1. A window comprising an inner glass and an outer glass and provided with a channel for circulation air and/or fresh air, characterized in that the inner glass facing a room is formed into an electric heating element and that a surface of the outer glass is provided with a coating for reflecting heat radiating outwards from the heating element back into the room.

4,641,467
COLUMN CONSTRUCTION
A. J. Dupuis, Jr., 127 W. White St., Opelousas, La. 70570-3596
Filed Jan. 21, 1986, Ser. No. 821,011
Int. Cl.[4] E04H 12/00
U.S. Cl. 52—297 6 Claims



1. A column assembly for buildings comprising a main column shaft made of concrete and that is annular in cross-section, a base and a capital at the lower and upper ends of the shaft respectively, the base comprising a base member having a flat upper face, a circular key mounted on the upper face of the base, an annular key formed integral with the lower end of the shaft and concentric with the shaft axis, the lower end of the shaft having an integral annular molding which has an outer diameter that is substantially greater than the exterior diameter of the lower portion of the shaft and also having a lower annular face coincident with a plane normal to the axis of the shaft and surrounding the annular key, the vertical dimension of the annular key being such that when the shaft is assembled on the base member with the annular key embracing the circular key, the annular key carries the load applied to the shaft and provides an annular gap between the upper face of the base mem-

ber and the said lower annular face of the annular molding, said annular gap being filled with non-load bearing grouting.

4,641,468

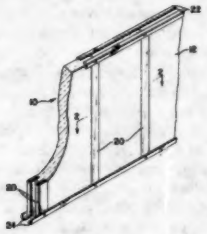
PANEL STRUCTURE AND BUILDING STRUCTURE MADE THEREFROM

Jack Slater, Islington, Canada, assignor to Cano International, N.V., Curacao, Netherlands

Continuation of Ser. No. 442,110, Nov. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 300,460, Sep. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 272,162, Jun. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 43,568, May 29, 1979, abandoned. This application Aug. 30, 1985, Ser. No. 771,030

Int. Cl.⁴ E04C *1/00*

U.S. Cl. 52—309.4 **5 Claims**



1. A fabricated composite load bearing panel serving as a building wall or the like comprising a plurality of modular elongated integral slabs of rigid foam insulating plastic material rectangular in section and each slab having two pairs of opposed surfaces, one pair of opposed surfaces having opposed substantially parallel recesses disposed centrally of said surfaces and extending from end to end thereof, splines of rigid foam heat insulating plastic material substantially filling said recesses and maintaining adjacent ones of said slabs in assembled relation with surfaces of adjacent slabs being disposed in full surface contact, certain of said slabs having an additional pair of laterally opposed substantially parallel recesses in the other pair of said surfaces, said additional recesses extending from end to end of said slabs, hollow tubular metal framing members securely surface bonded by adhesive means to said slabs and substantially occupying said additional recesses, said foam plastic material providing a thermal barrier between opposed framing members, and at least the outer surfaces of said framing members being flat and forming substantial continuations of said surfaces of said slabs.

4,641,469

PREFABRICATED INSULATING PANELS

Edward F. Wood, 258 Fairview Dr., Mundelein, Ill. 60060

Filed Jul. 18, 1985, Ser. No. 756,787

Int. Cl.⁴ E04C *1/00, 2/38*

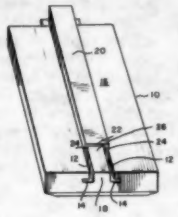
U.S. Cl. 52—309.12 **27 Claims**

1. An exterior insulation panel comprising:

a panel body having front, back, longitudinal side and lateral side surfaces;

at least one preformed channel into said back surface of said panel extending from one side surface to another side surface, said preformed channel including a first portion projecting through said panel from said back surface toward said front surface and a second portion continuous with said first portion projecting within said panel toward at least one of said side surfaces other than those between which the channel extends;

a flanged rigidifying means for strengthening said panel body which is slidably and matingly disposed within and extending substantially along the length of said channel, said rigidifying means also including means for structurally supporting said panel on the exterior surface of a building.



4,641,470

CONSTRUCTION ELEMENT

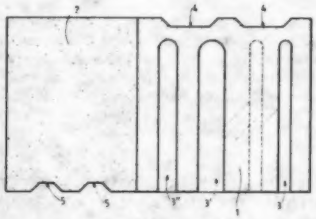
Werner Baumberger, 25, chemin du Point-du-Jour 1202 - Geneve, Switzerland

Filed Jul. 31, 1985, Ser. No. 761,228

Claims priority, application Switzerland, Aug. 15, 1984, 03914/84

Int. Cl.⁴ E04B *5/04*

U.S. Cl. 52—309.17 **9 Claims**



1. Construction element having dimensions of height, width and thickness, comprising a first bearing part formed from a light concrete having compression resistance between 25 and 175 kg/cm^2 and an apparent density between 900 and 1250 kg/m^3, said bearing part comprising elongated cylindrical cavities extending in said height dimension, elongated in said width dimension, and arranged in alternating rows in said thickness dimension, said cavities forming about 25% by volume of said bearing part; and a second insulating part formed from a hydraulic binder based on cement, a first synthetic resin and an expanded mineral filler, said insulating part having an apparent density of at most 270 kg/m^3, said bearing part having a greater extent in said thickness dimension than said insulating part, said bearing and insulating parts being fixed together along a plane substantially perpendicular to said thickness dimension.

4,641,471

FASTENER FOR SECURING ROOFING MATERIAL TO CEMENTITIOUS ROOF DECKS

Kenneth E. Young, Greenville, S.C.; Hubert T. Dudley, Chelmsford, and Robert T. Frohlich, Bedford, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 2, 1978, Ser. No. 882,859

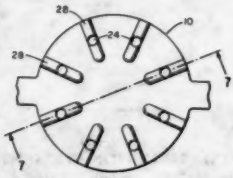
The portion of the term of this patent subsequent to Feb. 10, 2004, has been disclaimed.

Int. Cl.⁴ F16B *15/02, 15/04*

U.S. Cl. 52—361 **8 Claims**

1. An improved sheet metal nail for attaching a base ply of a multi-ply built-up roofing membrane to a soft not fully cured

cementitious construction material and over which nail and ply fluid asphalt is to be applied after installation, said nail having a generally flat disc-shaped head serving as a washer to hold said base ply down and a narrower hollow penetrating shank depending from the lower planar surface of said head, said shank being comprised of a pair of overlapping, channel-shaped legs, at least one of said legs being adapted to expand relative to the other during insertion into said construction material to thereby capture said construction material within said hollow shank and lock the nailing element in the construction material; said head having broad upper and lower opposed planar surfaces and narrow terminal end surfaces, the width of



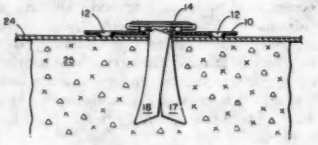
said head across its narrowest dimension being at least about 1.75 inches, said head having a plurality of openings therethrough distributed around its outer extremity which openings extend from said upper planar surface to said lower planar surface, said head further having at least one embossment raised from at least one of its said planar surfaces communicating with said opening and edge of said head and acting as an asphalt-conducting channel, whereby fluid asphalt applied over said nail and said base ply is permitted to fill said openings and also to flow between said head and said base ply in order to bond the portion of the base ply beneath said tab and increase the resistance of the roofing membrane to uplifting by wind.

4,641,472

FASTENER FOR SECURING ROOFING MATERIAL TO CEMENTITIOUS ROOF DECKS HAVING REMOVABLE TAB

Kenneth E. Young, Greenville, S.C.; Hubert T. Dudley, Chelmsford, and Robert T. Frohlich, Bedford, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 2, 1978, Ser. No. 882,709
Int. Cl.[4] F16B *15/02, 15/04*
U.S. Cl. 52—361 **8 Claims**



1. The combination of roofing material for waterproofing a roofing deck and a holder for securing said roofing material to the deck, comprising said roofing material including at least one layer of resilient sheet material engaging said deck and a layer of waterproof adhesive covering said resilient sheet material, said adhesive being flowable when it is applied and substantially non-flowable after it sets, said holder including a generally flat body having upper and lower surfaces and an outer edge, means for penetrating said resilient sheet material and attaching said holder to the deck with a substantial portion of said lower surface engaging said sheet material, said holder having a plurality of raised portions extending generally radially inwardly from said outer edge, each of said raised portions having an upper convex surface and a lower concave surface in which said convex surfaces extend above said upper surface of said body and said concave surfaces define hollow spaces below said raised portions which extend to said outer edge and permit flowable adhesive to flow thereinto, and said holder having a plurality of apertures extending through said raised portions and communicating with said hollow spaces to permit flowable adhesive to flow into the hollow spaces and form enlarged plugs, whereby said resilient sheet material is attached to the deck by said holder and said pentrating means and thereafter flowable adhesive is applied to said resilient sheet material and said upper surface of said holder and said adhesive flows into the outer ends of said hollow spaces and through the openings to form enlarged plugs in the hollow spaces which are integrally connected to the adhesive above said holder when said adhesive sets.

2. An improved fastener for attaching a base ply of a multi-ply built-up roofing membrane to a soft not fully cured cementitious construction material and over which ply fluid asphalt is to be applied after installation, said fastener being comprised of (a) a centrally located nailing element positioned within (b) a separate base ply bonding element non-integral with said nailing element, said central nailing element having a generally flat planar head serving as a washer to hold said base ply down and a narrower hollow penetrating shank depending from the lower planar surface of said head, said shank being comprised of a pair of overlapping, channel-shaped legs and being adapted to expand during insertion into said construction material to thereby capture said construction material within it and lock the nailing element in the construction material; said base ply bonding element being in the form of a generally flat tab having broad upper and lower opposed planar surfaces, narrow terminal end surfaces and a central opening penetrated by said shank, said central opening being narrower than said nailing element head in order that at least a portion of said lower surface of said head bears on the said upper planar surface of said tab, said tab being wider in crosswise dimension than said nailing element head so that a portion of said tab extends beyond said head, said tab having a plurality of additional openings therethrough distributed around its portion extending beyond said head which openings extend from said upper planar surface to said lower planar surface, said tab further having at least one embossment raised from at least one of its said planar surfaces communicating between at least one of said additional openings and a said terminal end surface of said tab, said embossment acting as an asphalt-conducting channel, whereby fluid asphalt applied over said fastener and said base ply is permitted to fill said additional openings and also to flow between said tab and said base ply in order to bond the portion of the base ply beneath said tab and increase the resistance of the roofing membrane to uplifting by wind.

4,641,473

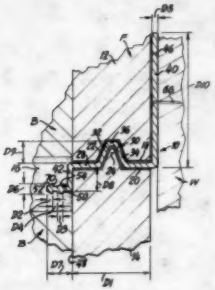
CLIP CONSTRUCTION FOR WALL ARRANGEMENT

Ronald F. Trezza, P.O. Box 764, Melville, N.Y. 11747

Filed Dec. 23, 1985, Ser. No. 812,233
Int. Cl.[4] E04B *5/00*
U.S. Cl. 52—410 **4 Claims**

1. A clip construction adapted for retaining a body of material against a wall which includes siding sections in generally endwise abutting relation, said clip construction comprising a central portion adapted to lie between said siding sections, parallel further portions extending perpendicularly from the central portion at spaced positions on the central portion and being adapted to lie on opposite sides of said siding sections, and protruding means on at least one of said further portions and adapted for being embedded in said body to retain said body against said wall, the other of said further sections being adapted for connection to the wall, said central portion including groove means defining a trapezoidal groove extending generally in parallel with said further portions, said protruding means including a flange on and extending from said one fur-

ther portion and parallel ridges extending along and on opposite sides of said flange and being spaced from and at least generally parallel to said one further portion, said ridges having profiles which are arrowhead-shaped and which point in a direction away from said one further portion, said ridges being solid and having faces which are parallel to said one further portion.

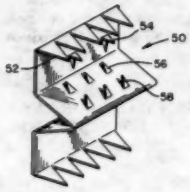


4,641,474

STA-PUT WALLBOARD JOINER

Robert C. Cannarsa, 21 Townsend St., Glen Head, N.Y. 11545

Filed Sep. 11, 1985, Ser. No. 774,703
Int. Cl.[4] E02D *37/00*; E02G *23/00*
U.S. Cl. 52—514 **4 Claims**



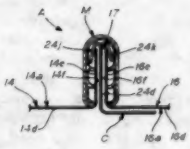
1. A fastener for securing a section of wallboard fitted into an opening in a wall of wallboard construction comprising metal clip means having a pair of spaced flat surfaces substantially in the same plane as, and having teeth to penetrate, the adjacent exposed surfaces of said section of wallboard and said wall of wallboard when the former is inserted into said opening so that said spaced flat surfaces of said metal clip become flush with the surfaces of said section and will when said teeth fully penetrate said section and wall, V-shaped extension means comprising a pair of legs joined at the edges removed from said flat surfaces extending into the space between said section and wall, and teeth on the outside of and on both legs of said V-shaped extension directed toward said spaced flat surfaces so that when said clip is first mounted on said section of wallboard and the latter is then inserted into said opening in the wall of teeth on said clip will resist movement of said section once fully mounted in said opening flush with said wall, said spaced flat surfaces being flush against the surfaces of said wall and section simplifying the subsequent taping of the joint between said section and said wall on the exposed surfaces thereof.

4,641,475

MOISTURE RESISTANT SEAM ASSEMBLY

Jack A. Berridge, Houston, Tex., assignor to Berridge Manufacturing Co., Houston, Tex.

Continuation of Ser. No. 549,629, Nov. 7, 1983, abandoned. This application May 5, 1986, Ser. No. 859,793
Int. Cl.[4] E04D *1/36*
U.S. Cl. 52—584 **6 Claims**



1. A moisture resistant seam assembly for use with adjoining channel-shaped surface covering members having generally parallel, adjoining mating flanges which form an elongate seam therebetween, comprising:

a. an elongate seal member comprising resilient material and including a plurality of elongate ridges; and

b. an elongate cover member for positioning over such mating flanges and seam, and comprising substantially elongate first and second side portions connected by an elongate top portion so that said side portions may generally face each other from opposite sides of said mating flanges with said top portion covering said seam;

c. wherein said seal member is mountable generally within said cover member to overlie said mating flanges, at least in part, without intervening said mating flanges, with said cover member so positioned over said mating flanges, and such that at least one said seal member ridge may sealingly engage the outer surface of each of said mating flanges, said seal member being held toward said flanges by said side portions of said cover member, to seal said seam.

4,641,476

ROOF EDGE CONSTRUCTION

Russell Webb, Woodfin, and John B. Hickman, Asheville, both of N.C., assignors to W. P. Hickman Company, Asheville, N.C.

Filed May 13, 1985, Ser. No. 733,641
Int. Cl.[4] E04D *1/36*
U.S. Cl. 52—60 **36 Claims**

1. An assembly for forming a raised roof edge on a building structure having a generally horizontal roof and a generally vertical outer face, said assembly comprising:

a dam member having a generally vertical dam portion with an inwardly directed face for confronting the outer face of the building structure, said generally vertical dam portion further having an upper dam portion and a lower dam edge portion, said dam member including a sloping dam portion extending generally downwardly and inwardly generally from said upper dam portion, and attachment

means for attaching said generally vertical dam portion to the outer face of the building structure with said upper dam portion protruding upwardly above the roof of the building structure;

a fascia member installable on said dam member and having a generally concave upper portion for receiving said upper dam portion therein and a lower channel portion for receiving said lower dam edge portion therein when said fascia member is installed on said dam member; and

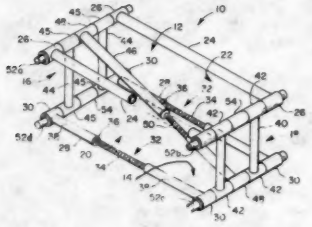
a spring clip member for interposition between said fascia member and said dam member when said fascia member is installed thereon, said spring clip member having a generally vertical spring clip portion positionable in a generally confronting relationship with said generally vertical dam portion, a first sloping portion extending generally downwardly and inwardly generally from said vertical spring clip portion when said spring clip member is positioned on said dam member, said spring clip member further having a lower spring clip edge portion on said first sloping portion, and a second sloping portion extending generally upwardly generally from said lower spring clip edge portion, at least said second sloping portion being resiliently deflectable generally downwardly and outwardly toward said first sloping portion when said fascia member is installed on said dam member with said spring clip member interposed therebetween said first sloping portion of said spring clip member confronting said sloping dam portion when said spring clip member is interposed between said fascia member and said dam member and said fascia member is installed on said dam member.

4,641,477

ADJUSTABLE MODULAR BUILDING

Herman A. Schleck, Lamar Tower, Suite 2108, 2929 Buffalo Speedway, Houston, Tex. 77098

Filed Jan. 6, 1986, Ser. No. 816,436
Int. Cl.[4] E04B *1/342, 1/343, 1/32, 1/348*
U.S. Cl. 52—646 **12 Claims**



1. An adjustable modular building unit comprising:

a generally rectangular top side;

a left side and a right side which depend from said top side;

a bottom side connecting said left side and said right side;

side connecting means for rotatably connecting adjacent said sides, including a top-left connecting means, a top-right connecting means, a bottom-left connecting means, and a bottom-right connecting means;

a bottom adjusting means for adjusting the length of said bottom side;

a diagonal brace member extending diagonally between two of said side connecting means whereby said sides are held against relative rotation;

brace connecting means for rotatably connecting said brace member to the two side connecting means; and

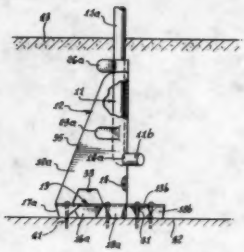
a brace adjusting means for adjusting the length of said brace member.

4,641,478

CONSTRUCTION BOLT HOLDER

E. Delbert Nelson, Jr., 10245 Parr Ave., Sunland, Calif. 91040

Filed Jan. 27, 1986, Ser. No. 830,321
Int. Cl.[4] E04C *5/12*
U.S. Cl. 52—704 **11 Claims**



1. A mount for a construction bolt to be embedded in poured concrete and including said bolt in combination with the mount comprising

(a) a standard having a supportable base, and defining a support for the lower end of the bolt, so that the bolt shank projects upwardly, the standard including first and second upright sections which are relatively angled to defined a vertical fold, the bolt having a shank proximate the fold, the base including first and second sections integral with the respective standard first and second sections,

(b) the standard having surfaces and openings whereby the poured concrete can flow onto and through the standard, and below the support and the bolt lower end, to anchor the standard with the bolt held in upright position, one of said openings located at the fold and passing a turned end defined by the bolt to locate the bolt relative to the standard,

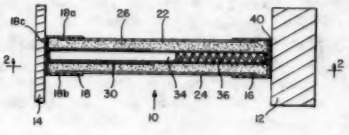
(c) there being at least one retainer on the standard proximate the fold and above said one opening, for retaining the bolt shank to the standard, proximate the vertical fold.

4,641,479

CLOSURE INSERT FOR USE IN BUILDING CONSTRUCTION

Jay B. Spurlock, 17629 Maple Valley Rd., SE., Maple Valley, Wash. 98038

Filed Jul. 2, 1984, Ser. No. 626,745
Int. Cl.[4] E04H *5/00*
U.S. Cl. 52—241 **4 Claims**



1. A self-contained insert for use in building construction to close the area between an exterior portion of the building such as a wall or a window mullion and an interior element such as a wall or column without altering either the exterior portion of the building or the interior element, the insert comprising:

two opposing, vertical, inwardly opening U-shaped end channel members, each of said channel members comprising two parallel extending side walls and an intermediate end wall, the end walls of the two channel members each having an outer surface which is adapted to provide substantial, continuous contact with the exterior portion of

the building and the interior element, respectively, when the closure insert is in place;

two opposing, vertical, flat side panel members, extending respectively between, opposing side walls of the two channel members, with the channel members overlapping the side panel members, each panel member having top and bottom edges and two side edges and exterior and interior panel surfaces, wherein the exterior panel surface of each panel member, in the area adjacent the respective side edges thereof, fits flush against the interior surface of the respective opposing side walls of the channel members, and wherein the two panel members are not connected directly to each other or to said channel members, so that the two panel members are free to move independently relative to said channel members and each other, in response to relative movement between the exterior portion of the building and the interior element;

insulation positioned between said first and second panel members for maintaining the flush contact between the panel members and the side walls of the channel members; and

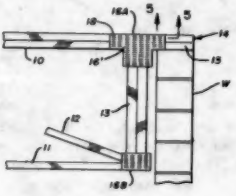
a plurality of spring-biased, telescoping spacer members which extend between the two channel members, tending to maintain the end walls of the channel memebers in contact with the exterior portion of the building and the interior element, respectively.

4,641,480

COMBINATION CONNECTOR PLATE AND TAIL TRUSS

Edgar A. Mort, Poland, Ohio, assignor to Inter-Lock Steel Company, Inc., East Palestine, Ohio

Filed Jun. 3, 1985, Ser. No. 740,854
Int. Cl.[4] E04C *3/12*
U.S. Cl. 52—693 **2 Claims**



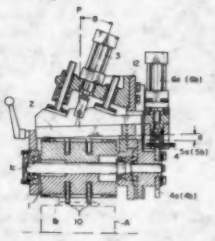
1. An improvement in a tail truss having upper and lower chords, diagonal webs and vertical end sections connecting said chords and end extensions on said upper chord extending beyond said vertical end sections; the improvement comprising a structural joint consisting of a combination of said vertical end sections, the end extensions on said upper chord, the portions of said upper chord adjacent said vertical end sections T-shaped connector plates joining each of said vertical end sections to said portions of said upper chord adjacent each of said vertical end sections and the end extensions of said upper chord, said upper and lower chords, diagonal webs and vertical end sections being formed of wooden members and each of said T-shaped connector plates consisting of a metal plate having a vertical portion and a horizontal portion and having a multiplicity of struck out nails thereon formed therefrom at right angles thereto and embedded in said vertical end sections and said upper chord and end extensions thereof with said horizontal portions of said T-shaped connector plates extending along said upper chord and along said end extensions thereof so as to hold said end extensions in axial alignment with said upper chord from which they extend, said T-shaped connector plates being applied to both sides of said tail truss and having said vertical portions affixed to said vertical end sections with said horizontal portions being affixed to said upper chord on both sides of said vertical end section.

4,641,481

DEVICE FOR CUTTING A NARROW STRIP OF CONTINUOUS ARTICLES FOR PACKAGING

Göran Brosten, Richmond Surrey, England, assignor to Tetra Pak International Aktiebolag, Lund, Sweden

Filed Sep. 11, 1985, Ser. No. 774,756
Claims priority, application Japan, Sep. 12, 1984, 59-191400
Int. Cl.[4] B26D *5/10*; B32B *31/00*
U.S. Cl. 53—128 **1 Claim**



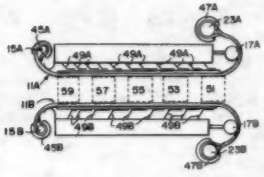
1. A device for cutting a narrow strip of continuous articles for packaging including a cutting drum which has a plurality of feed grooves formed on an external peripheral surface thereof at predetermined intervals to be intermittently rotated and for arranging the continuous article for packaging, which are supplied to said external peripheral surface, to be cut into individual packages by means of actuating a cutter from the outside of said cutting drum to said continuous article for packaging, characterized in that said cutter is actuated transversely to the cutting drum in a slanting direction in which said cutter forms an angle with respect to a perpendicular line drawn at a right angle to said continuous articles for packaging on said cutting drum and is mounted with an inclination such that the lower end of said cutter corresponds to its advancing end and in the cross direction of its edge, contacts with the top of said continuous articles for packaging first when said cutter is actuated.

4,641,482

HEAT STATION FOR A HEAT SEALING SYSTEM

Bruce E. Metz, Wilmington, Del., assignor to Athena Controls Inc, Plymouth Meeting, Pa.

Filed Oct. 6, 1982, Ser. No. 433,001
The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.
Int. Cl.[4] B65B *51/12*
U.S. Cl. 53—388 **11 Claims**



1. A sealing station having an entrance location and an exit location for sealing at least part of some sealable material which makes up at least part of a package, wherein said package is moved along a path through said sealing station comprising in combination: flexible heat transfer means extending along said path and having two opposing sides so that one of said sides comes into contact with at least some portion of sealable material of a package which is being moved along said

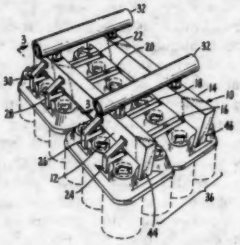
path; flexible heat generating means comprising a plurality of separate heat generating segments secured directly to the other side of said flexible heat transfer means to provide heat thereto for transferring heat to said sealable material coming in contact with said one side of said flexible heat transferring means, each generating segment connected with independent and separate energy source means and formed so that the heat generating segment disposed closest to said entrance location on each of said first and second transfer means provides more heat to sealable material coming in contact therewith than any other of said heat generating segments and force exertion means disposed along the length of said path to come into contact with each of said plurality of flexible heat generating means, and formed to segmentally push said flexible heat generating means which in turn pushes said flexible heat transfer means into contact with said sealable material along the length of said path.

4,641,483

CONTAINER HOLDER FITTING DEVICE

Warren Yamauchi, 16326 Rainbow Ridge Rd., Carbon Canyon, Calif. 91710

Filed Sep. 6, 1985, Ser. No. 773,375
Int. Cl.[4] B65B *27/04*
U.S. Cl. 53—390 **11 Claims**



1. A device for forcing a flexible, contoured holder over the necks of a predetermined arrangement of containers, the holder being of the type having a first flat upper surface, openings for receiving the necks of the containers and shoulders spaced along its periphery, each shoulder having a second flat upper surface below and parallel with the first flat upper surface, the device comprising:

a pair of horizontal pipes arranged parallel to, and spaced apart from each other,

a plurality of cross bars connected perpendicularly to the pipes and arranged parallel to, and spaced apart from each other,

each of the cross bars having a downwardly extending leg at each end for engagement with a corresponding shoulder of the holder,

each downwardly extending leg having a length approximately equal to the vertical distance between the first and second surfaces whereby the cross bars bear against the first surface while the downwardly extending legs bear against the second surface of the holder, and

handle means for manually applying a downward force to the pipes.

4,641,484

HAY BALE WRAPPING MACHINE

Frank E. Popelka, 2221 Big Bend Rd., Ely, Iowa 52227

Filed Jul. 8, 1985, Ser. No. 752,655
Int. Cl.[4] B65B *13/02*; A01D *39/00*
U.S. Cl. 53—399 **12 Claims**

1. A machine for wrapping the periphery of large cylindrical hay bales comprising:

(a) a supporting, generally horizontal frame having forward and rearward ends;

(b) means supporting the frame for travel over the ground;

(c) transport means adjacent the forward end of the frame for moving the frame over the ground;

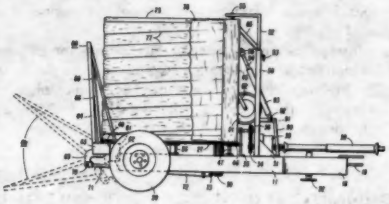
(d) a generally horizontal bale wrapping table carried by the frame adjacent its rearward end and mounted for rotation about a generally vertical axis;

(e) first powered means for selectively rotating the table;

(f) bale wrap mounting means carried by the machine and disposed adjacent the table for supporting a cylindrical roll of sheet material for rotation about a generally vertical axis;

(g) bale handling means carried by the machine for engaging a bale lying on its peripheral side on the ground and disposing one end of the same on the bale wrapping table for rotation therewith,

the bale handling means after wrapping of the bale thereupon redisposing the wrapped bale back onto the ground on its peripheral side; and



(h) second powered means for selectively operating the bale handling means.

10. A method of wrapping a large cylindrical hay bale disposed upon the ground, the bale having a pair of opposite ends and a cylindrical peripheral surface therebetween having an axis, the method comprising:

(a) lifting the bale from the ground;

(b) positioning the lifted bale so that said axis is substantially vertical;

(c) fixing one transverse end of a length of sheet material relative to the bale so that said material end extends substantially across said bale surface between said bale ends;

(d) rotating the bale about said axis while feeding the sheet material onto said bale surface so that the same is wrapped around with the sheet material; and

(e) securing a second end of the sheet material to the bale.

4,641,485

CONTAINER STUFFING APPARATUS AND METHOD

Richard Schmidt, Ambler, Pa., and Joseph A. Pizzo, Sr., Cherry Hill, N.J., assignors to Enviro-Spray Systems Incorporated, Montgomeryville, Pa.

Division of Ser. No. 704,595, Feb. 25, 1985, Pat. No. 4,594,834.
This application Dec. 3, 1985, Ser. No. 805,126
Int. Cl.[4] B65B *63/02, 63/04*
U.S. Cl. 53—429 **13 Claims**

1. A method for inserting flexible sheet products into containers, each of said products comprising an expandable pouch for pressurizing a container, said pouch including burstable means for generating pressurizing gas within said pouoh, the method comprising the steps of:

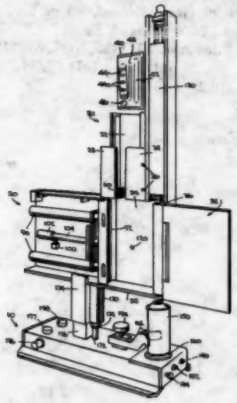
compressing the planar sides of said sheet product so as to burst said burstable means;

receiving said sheet product after said step of compressing in a chamber means having opposing substantially flat inner side surfaces and first and second ends;

forcing said sheet product in said chamber against one of said flat surfaces and spacing it away from the other of said surfaces;

deforming said sheet product into an elongate folded shape

by moving said first end toward the second end to contact one edge of said product and to force said sheet product



against said second end while said one surface guides said sheet product; and

inserting said elongate sheet product into said container.

4,641,486

METHOD AND AN ARRANGEMENT FOR PACKING MACHINES

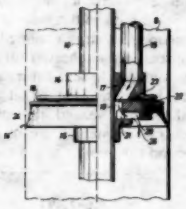
Eros Zannoni, Rubiera, Italy, assignor to Tetra-Dev Co., Modena, Italy

Filed Jul. 25, 1985, Ser. No. 758,886

Claims priority, application Sweden, Jul. 31, 1984, 8403925

Int. Cl.[4] B65B *31/00*

U.S. Cl. 53—433 **14 Claims**



12. In a packing machine of the type in which a tube of packing advances continuously downward while liquid contents are supplied to the interior of the tube to a lower zone in said tube through a fixed filling pipe and gas is supplied to said lower zone through a seal between said filling pipe and said tube, the improvement comprising a seal ring, collar means on said filling pipe, said seal ring being mounted in said collar means, said collar means and said seal ring including means for allowing radial movement of said seal ring relative to said filling pipe, and a flexible sealing element on said seal ring for engaging the interior of said tube and maintaining a seal between said tube and said filling pipe.

4,641,487

MACHINE AND METHOD FOR CUTTING, SHAPING AND CANNING MEAT, FISH AND THE LIKE

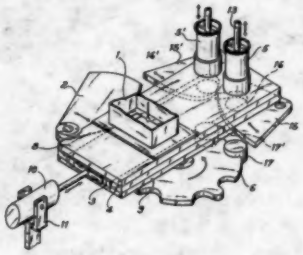
Andrea Darecchio, Parma, Italy, assignor to FMC Corporation, Chicago, Ill.

Filed Oct. 4, 1985, Ser. No. 784,424

Claims priority, application Italy, Oct. 18, 1984, 23219 A/84

Int. Cl.[4] B65B *63/00*

U.S. Cl. 53—435 **2 Claims**



1. A method of packaging sliced meat products such as fish comprising the steps of confining the slices in a cavity formed with wall portions corresponding to the configuration of a portion of the package, compressing the slices to make intimate and forceable contact with the walls of the cavity, said compression being effective to compact the slice sufficiently to achieve a substantially consistent density, cutting the compressed slice with a hollow cutter having a peripheral cutting edge shaped to conform with the shape of the package and concurrently retaining the cut slice in the hollow portion of the cutter, opening the cavity and positioning a package in the projected area of the cutter at the cavity opening, moving the cutter retaining the cut slice into the package, and displacing the cut slice relative to the cutter and into the package and while withdrawing the cutter therefrom.

4,641,488

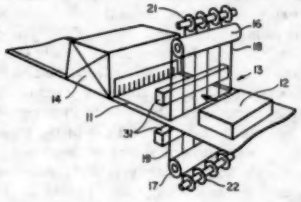
APPARATUS AND METHOD FOR WRAPPING PACKAGES WITH HEAT SHRINKABLE MATERIAL

Ernest J. Garr, 3587 Powell Dr., Lafayette, Calif. 94549

Filed Jul. 6, 1983, Ser. No. 511,544

Int. Cl.[4] B65B *11/52, 11/58*

U.S. Cl. 53—442 **15 Claims**



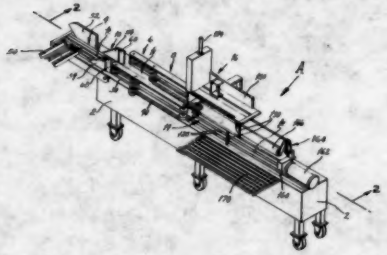
1. In apparatus for wrapping a package with heat shrinkable material; means for encircling the package with a film of heat shrinkable material, means for encircling a portion of the package with a reinforcing band of heat shrinkable material of substantially lesser width than the film, and means for simultaneously heating the film and the reinforcing band to shrink both the film and the band tightly about the package.

4,641,489

MACHINE FOR HANDLING SIGNATURES

James R. Wood, Salem, Ill., assignor to World Color Press, Inc., Effingham, Ill.

Filed Sep. 28, 1984, Ser. No. 655,259
Int. Cl.[4] B65B *13/20, 35/44*
U.S. Cl. 53—529 22 Claims



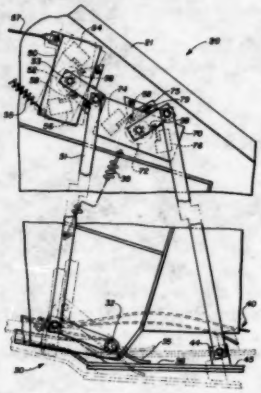
1. A machine for handling a succession of flexible sheets, such as signatures, to obtain a discrete bundle of sheets from the succession, said machine comprising: first and second aligned conveyors located along a path along which the sheets are advanced, each of the conveyors being configured to support the sheets in an edge-standing condition with the sheets being bowed forwardly in the direction of advance so that the midportion of each sheet leads the side edges for that sheet, each of the conveyors further having moving surfaces against which the sheets are positioned such that the sheets move with the moving surfaces, the moving surfaces of the second conveyor being along the sides of that conveyor; the second conveyor being located immediately after the first conveyor such that the sheets pass from the moving surfaces of the first conveyor to the moving surfaces of the second conveyor; drive means for normally advancing the moving surfaces of the first and second conveyors in unison, with the surfaces of the first conveyor normally moving at a velocity no less than the surfaces of the second conveyor and for further momentarily increasing the speed of the surfaces for the second conveyor to a velocity greater than the velocity of the surfaces for the first conveyor so as to produce at the location where the second conveyor leads away from the first conveyor a region of looseness in the succession of sheets; a parting member located along the path at the location where the region of looseness develops and normally being retracted from the path; means for extending the parting member generally vertically into the path so that it passes between two of the sheets in the region of looseness and for thereafter moving the parting member forwardly to create a distinct gap in the succession of sheets, so as to isolate a bundle of sheets ahead of the gap; retaining elements located along the sides of the path in the region where the second conveyor leads away from the first conveyor and being movable between retracted and extended positions, the retaining elements normally being in their retracted positions where they are located to the sides of the path so as not to interfere with the bowed sheets as they pass from the first conveyor to the second conveyor, the retaining elements when in their extended positions projecting into the path at the region of looseness such as to prevent the sides of sheets that are behind the parting member from coming against and being propelled by the moving side surfaces of the second conveyor; and means for projecting the retaining elements into the path about when the parting member moves forwardly in the path so that the retaining elements prevent sheets that are behind the parting member from moving forwardly with the parting member as the parting member creates the gap.

4,641,490

HEADER HEIGHT/LATERAL FLOAT CONTROL FOR COMBINE HEADER

Edward J. Wynn, Leola; Glenn A. Musser, and Lawrence M. Halls, both of New Holland, all of Pa., assignors to New Holland Inc., New Holland, Pa.

Filed Apr. 12, 1985, Ser. No. 722,585
Int. Cl.[4] A10D *75/28*
U.S. Cl. 56—10.2 13 Claims



8. A mechanism for controlling the movements of a crop harvesting header mounted on a harvesting machine to permit said header to follow changes in ground contour, said header being operably associated with header lift means for powering a generally vertically movement relative to said harvesting machine and with a header tilt means for powering a transverse tilting movement of said header relative to said harvesting machine, comprising:

a height sensor having a sensor bar rotatably mounted on said header and extending between transversely spaced ends of said header, said sensor bar having a plurality of fingers movable with the changes in ground contour relative to the header to cause rotation of said sensor bar;

first and second tilt sensors connected to the ground engaging members adjacent the transverse ends of said header, respectively, said tilt sensors being movable with the corresponding ground engaging member with changes in the ground contour relative to said header; and

control means operably interconnecting said sensors and said header lift means and said header tilt means to actuate said header lift means and said header tilt means in response to the sensing of changes in ground contour relative to said header by said sensors, said first and second tilt sensors being connected in series such that said header tilt means is not actuated unless said first and second tilt sensors are in different positions.

4,641,491

AGRICULTURAL MACHINE

Edwin van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely, N.V., Maasland, Netherlands

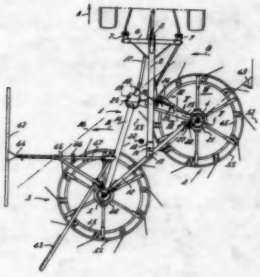
Filed Mar. 6, 1985, Ser. No. 708,639
Int. Cl.[4] A01B *73/00*
U.S. Cl. 56—228 37 Claims

1. An agricultural machine comprising:

a frame including means adapted for connection to a three-point lifting device of a tractor which are so constructed and arranged that said frame can be raised by said three-point lifting device;

a sub-assembly comprising a working member of the machine; and

connecting means connecting said sub-assembly to said frame for pivotal displacement between a working position and a transport position about an upwardly extending pivotal axis which, in the working position is inclined to the rear with respect to the intended direction of operative travel of the machine, from bottom of top;



the center of gravity of said sub-assembly, when in said working position, being spaced from said pivotal axis so that when the machine is lifted by a tractor's three-point lifting device it is displaceable by gravity from said working position to said transport position when the tractor and machine are supported by a substantially level surface.

4,641,492

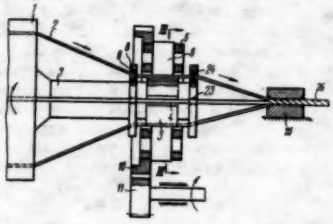
ROPE-TWISTING MACHINE FOR MAKING ROPES

Mikhail F. Glushko, Viktor K. Skalatsky, and Anatoly D. Zakhryamin, all of Odessa, U.S.S.R., assignors to Odessky Nauchno-Issledovatelsky Otdel Stalnykh, Odessa, U.S.S.R.

Filed Nov. 21, 1984, Ser. No. 673,612

Int. Cl.⁴ D07B *7/00*

U.S. Cl. 57—9 **8 Claims**



1. A rope-twisting machine for making ropes comprising arranged on a base in succession:

a rotor carrying rope elements;

a mandrel rigidly connected to said rotor;

shaping grooves provided in said mandrel;

a casing arranged concentrically around said mandrel and capable of relative rotation with said rotor; and

pressure rollers mounted in said casing for rolling on an outer periphery of said mandrel as the mandrel is rotated to press the rope elements into said shaping grooves to deform the rope elements to the shape of the shaping grooves, the axes of said pressure rollers being disposed in planes passing through the axis of rotation of the rotor.

4,641,493

LUBRICANT APPLICATOR FOR TWO-FOR-ONE TWISTER

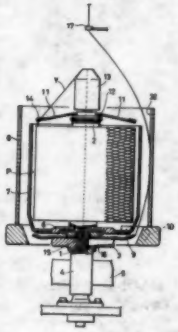
Mitsuo Fukunaga, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Jan. 10, 1985, Ser. No. 690,665

Claims priority, application Japan, Jan. 21, 1984, 59-6712[U]

Int. Cl.⁴ D01H *13/30, 7/86*

U.S. Cl. 57—296 **5 Claims**



1. A yard lubrication device in a two-for-one twister comprising:

a spindle having a substantially vertical spindle shaft capable of supporting a yarn package thereon,

a tenser disposed adjacent an upper portion of said spindle shaft above the location of said yarn package

a guide surface having an aperture therein mounted on said tenser,

means for drawing yarn from said yarn package across said guide surface and through said aperture disposed in said guide surface,

a lubrication element protruding from a portion of said guide surface,

means for adjusting the degree of protrusion of said lubrication element from said guide surface, and

means for intermittently bringing said yarn into contact with said lubrication element as said yarn is drawn from said yarn package through said aperture.

4,641,494

DEVICE FOR FEEDING-IN A THREAD END INTO A SPINNING NIP OF A FRICTION SPINNING MACHINE

Hans Raasch, and Heinz-Georg Wassenhoven, both of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Dec. 4, 1985, Ser. No. 805,327

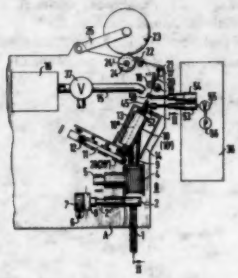
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1984, 3444427

Int. Cl.⁴ D01H *15/02, 1/135*

U.S. Cl. 57—401 **5 Claims**

1. Device for feeding-in a thread end through a thread draw-off channel of a thread guiding element into a spinning nip of a friction spinning device, comprising a pressurized-gas injection device in the thread guiding element for producing an air flow in the thread draw-off channel opposite in direction to that of a thread draw-off direction of a spinning operation in

the friction spinning device, whereby a thread end is entrained thereby, the thread draw-off channel continuing along the



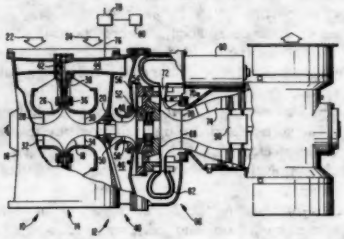
spinning nip from a termination thereof in the thread guiding element.

4,641,495

DUAL ENTRY RADIAL TURBINE GAS GENERATOR

R. Jan Mowill, Oslo, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway

Filed Feb. 5, 1985, Ser. No. 698,586
Int. Cl.[4] F02C *3/10*
U.S. Cl. 60—39.161 **26 Claims**



1. A high efficiency, single spool gas turbine gas generator comprising:

(a) compressor means for providing an overall pressure ratio of greater than about 15:1, said compressor means including:

(i) a first stage, double-entry centrifugal air compressor having a pair of entrances and a common exit,

(ii) a second stage, centrifugal air compressor positioned adjacent to said first stage compressor, said second compressor stage having an entrance that is flow-connected to said first stage common exit and also having a second stage exit, and

(iii) a shaft assembly for mechanically interconnecting said first and said second stage for rotation at the same angular speed;

(b) combustor means operatively connected to the second stage exit for receiving the compressed air and combusting fuel using the compressed air to generate combustion gases;

(c) a single stage radial inflow turbine having an inlet and an outlet, said turbine being operatively connected directly to said shaft assembly drive and also being flow connected to said combustor means for receiving at said turbine inlet, and partially expanding, the combustion gases; and

(d) exhaust means flow connected to said turbine outlet flro channeling the partially expanded combustion gases for further external work-producing expansion, and wherein

(i) said first and said second compressor stages each having a configuration selected to provide a pressure ratio of said first compressor stage greater than about twice the pressure ratio of said second compressor stage, and

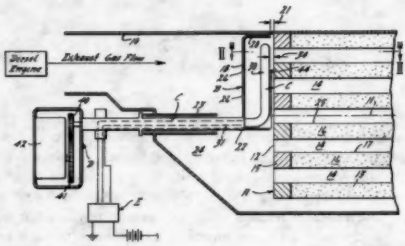
(ii) said first and second compressor stages each having a configuration selected to exhibit a respective specific speed each greater than about 0.60 at about optimum efficiency.

4,641,496

CONTINUOUS ROTARY REGENERATION SYSTEM FOR A PARTICULATE TRAP

Wallace R. Wade, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 17, 1984, Ser. No. 682,523
Int. Cl.[4] F01N *3/02*
U.S. Cl. 60—274 **8 Claims**



1. An apparatus for continously regenerating a particulate trap for an internal combustion engine, the apparatus having means for normally conducting exhaust gas flow of the engine to and through the entrance face of the trap, the entrance face of the trap being a circle, the trap having a plurality of generally aligned flow channels extending from the entrance face and along which columns of said particulates are collected, the apparatus comprising:

(a) movable means effective to shield a sector of said circle of said trap entrance face from the full flow of said exhaust gas, while permitting a portion of said exhaust gas flow to bleed therethrough at a flow rate substantially less than the flow rate of said exhaust gas flow;

(b) electrical resistance heating means having a moveable heating element carried only by said shield and interposed between said filter trap face and said shield; and

(c) means for substantially moving said shield and element conjointly about the apex of said sector to traverse the entire frontal entrance face of said trap to ignite one or more columns of the particulates in said trap aligned with said shield and element, said ignited particles and bleed flow causing oxidation to proceed throughout the extent of said columns of particulates without need of additional exterior heat.

4,641,497

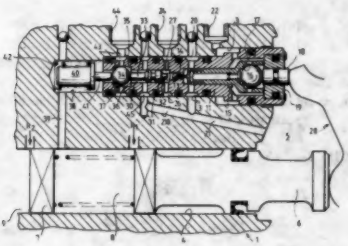
DEVICE FOR GENERATING BRAKING PRESSURE FOR A BRAKING INSTALLATION WITH TWIN CIRCUITS

Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Feb. 15, 1985, Ser. No. 701,906
Claims priority, application France, Feb. 22, 1984, 84 02654
Int. Cl.[4] B60T *13/58, 17/00*; F15B *7/00*
U.S. Cl. 60—563 **9 Claims**

1. A device for generating braking pressure for a braking installation including at least two braking circuits, particularly for a motor vehicle, including a casing enclosing a working chamber intended to be joined to a first braking circuit, a sliding actuating piston having a first end exposed to the working chamber and defining, at a second end, a first braking

pressure chamber intended to be joined to a braking circuit, control valve means for admitting selectively into the working chamber fluid pressure from a source of fluid pressure, and an actuating plunger intended to be joined to a brake pedal and projecting into the working chamber to be coupled mechanically with the first end of the actuating piston and with the control valve means, characterized in that the device includes a master cylinder piston exposed on one side to pressure existing in the first braking pressure chamber and defining on the other side a second braking pressure chamber intended to be joined to a second braking circuit, a high pressure chamber intended to be joined permanently to the source of fluid pressure and communicating with the control valve means and with one end of a bore in which is mounted slidably and sealingly a mode selector piston coupled to three-way valve means, the three-way valve means pushed elastically in a direction toward the mode selector piston and capable of putting an output orifice of the casing, intended to be joined to the first braking circuit, into communication with one of the working chamber and first braking pressure chamber, the braking pressure chambers communicating, in a rest position of the device, with at least one reservoir, the three-way valve means comprising a ball situated in an intermediate enlargement of the bore and defining with the bore two annular seats facing one another and communicating with the output orifice.

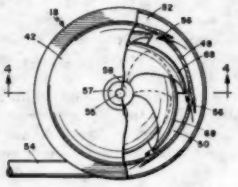


4,641,498

GEOTHERMAL TURBINE

Peter Markovitch, Los Angeles, and Philip H. Klepesch, La Jolla, both of Calif., assignors to Geothermal Energy Development Corporation, La Jolla, Calif.

Filed Sep. 30, 1982, Ser. No. 430,406
Int. Cl.[4] F01D *1/36*; F03G *7/04*
U.S. Cl. 60—641.2 **12 Claims**



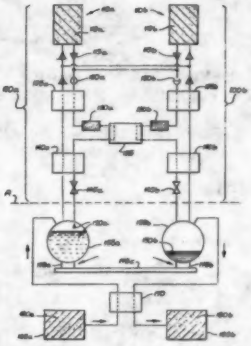
1. A two-phase fluid turbine comprising:
a housing having a generally cylindrical rotor chamber;
a plurality of nozzles for communicating fluid to said chamber at spaced points around the periphery of said chamber;
a manifold for communicating pressurized fluid from a source to said nozzles; and
a rotor mounted coaxially within said rotor chamber and including a plurality of radially converging blades mounted around a central hub, each blade overlapping the next adjacent blade by a sufficient amount to form converging flow guiding channels between the opposing overlapping faces of adjacent blades for directing flow from the exterior to the interior of the rotor, each blade having a radially outward tip positioned for interruption of fluid from said nozzles; said blades defining spiral evolute segments diminishing in radius and width in the direction of rotation.

4,641,499

TEN DEGREE KELVIN HYDRIDE REFRIGERATOR

Jack A. Jones, North Hollywood, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 14, 1985, Ser. No. 701,486
Int. Cl.[4] F17C *11/00*
U.S. Cl. 62—48 **11 Claims**



1. A refrigeration system for operation at temperatures lower than 20 degrees Kelvin, the system comprising:
liquefying means for producing a volume of liquid hydrogen from gaseous hydrogen;
a liquid hydrogen container for containing the volume of liquid hydrogen produced by the liquefying means;
an absorption vessel containing a chemical sorbent which absorbs gaseous hydrogen, the absorption vessel communicating with the liquid hydrogen container; and
cooling means for cooling the sorbent,
wherein when the cooling means is activated, the sorbent absorbs gaseous hydrogen from the liquid hydrogen container to thereby freeze the hydrogen contained therein and thereafter sublime the frozen hydrogen.

4,641,500

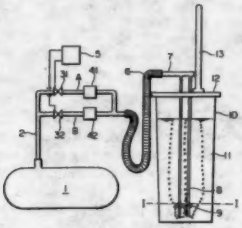
METHOD OF MAKING ICE HAVING A STRIPED PATTERN AND AN APPARATUS FOR MAKING THE SAME

Hidehiro Hosokawa, Yokohama; Yoshimichi Iida, Saitama, and Hisatsugu Takahashi, Chiba, all of Japan, assignors to Nichirei Corporation, Tokyo, Japan

Filed May 28, 1985, Ser. No. 738,465
Claims priority, application Japan, May 28, 1984, 59-106672
Int. Cl.[4] F25C *1/18*
U.S. Cl. 62—70 **5 Claims**

1. A method of making ice having a striped pattern which comprises the step of cooling and freezing raw water containing at least one soluble material, said cooling and freezing of the raw water being performed while simultaneously agitating the raw water during all or part of the cooling and freezing step, said agitating of the raw water being alternately repeated in two steps, the first step being with agitating the raw water

with a degree of agitation effective to form a transparent ice layer and the second step being without agitating or with



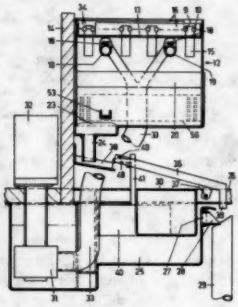
agitating the raw water with a degree of agitation effective to form a semi-transparent ice layer.

4,641,501

DEVICE FOR MAKING ICE CUBES

Marcellus C. P. L. Simkens, Hoogweg 24, B - 8050 Wingene, Belgium

Filed Feb. 6, 1986, Ser. No. 826,901
Claims priority, application Belgium, Feb. 14, 1985, 901732
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—188 **16 Claims**



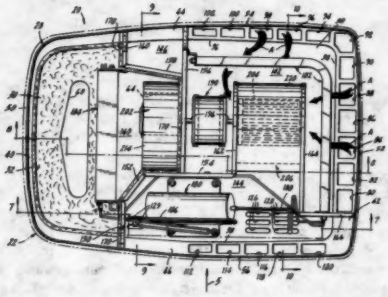
1. A device for making ice cubes, which device comprises:
a cooling device with at least one cooling element,
a water circuit which comprises:
a water tank,
means for feeding water from the water tank to the cooling element,
and
means for returning the excess water, which has not been converted to ice, to the water tank,
means for supplying before the ice formation water to said water tank,
water discharge means,
means for thawing somewhat after the ice formation, that ice formed on the cooling element, so that said ice is released from said cooling element,
a control device which so controls the means for supplying water to the water tank, the means for feeding water to the cooling element and the means for thawing somewhat the ice after its formation, that, before forming the ice, some water is added to the water tank, after adding said water, the supply is stopped, and as soon as enough ice has been formed on the cooling element, the means for feeding water from the water tank to the cooling element, stop the water feed, and the means for thawing somewhat the ice are started,
and
means for diverting during ice formation, a portion of that water circulating in the water circuit and leading same to the water discharge means, said means for diverting a portion of the water comprising a movable water-guiding member which is mounted in or on the water circuit, which member is movable between a position wherein at least a portion of the water flowing in said circuit is diverted to the water discharge means and a position wherein diverting does not occur, and which member is controlled by the control device so as to move from one position to the other in function of the water level in the water tank.

4,641,502

ROOF MOUNT AIR CONDITIONER

Roger L. Aldrich, LaGrange, Ind.; Peter C. Bodett, Sturgis, Mich., and Richard E. Kelly, Orland, Ind., assignors to The Duo-Therm Corporation, Ind.

Continuation of Ser. No. 690,097, Jan. 9, 1985, abandoned. This application Jul. 9, 1986, Ser. No. 883,581
Int. Cl.[4] B60H *10/02*
U.S. Cl. 62—244 **32 Claims**



1. An air conditioning unit comprising a cabinet with an assemblage of mechanical refrigeration system components mounted in an operable array in said cabinet and including a condenser coil disposed in a condenser coil compartment with said cabinet, said cabinet comprising a base pan having said components mounted thereon and a removable shroud mounted over said base pan to cover said components, wherein the improvement comprises said base pan having a bottom wall and an upstanding perimeter wall connected to said bottom wall having at its upper edge an outwardly protruding porch flange to provide an overhang ledge extending at least partially along the perimeter of said base pan, said ledge having air inlet and outlet means therein providing air flow communication between ambient air exteriorly of said cabinet and said interior condenser coil compartment of said unit.

11. An air conditioning unit adapted for roof mounting on a recreational vehicle or the like and presenting an overall low profile appearance thereon comprising a cabinet having a base pan and a cover with an assemblage of mechanical refrigeration system components mounted in an operable array in said cabinet on said base pan, said cabinet being generally rectangular in plan view with its front and rear ends forming the narrower ends thereof and adapted to be juxtaposed respectively to the front and rear ends of the vehicle, said cabinet having bulkhead means therein sub-dividing the interior of said cabinet into at least an evaporator coil compartment at the interior front of said cabinet and a condenser coil compartment extending from said evaporator coil compartment to the interior rear of said cabinet, wherein the improvement comprises having said components include first and second low profile centrifugal blowers disposed respectively in said evaporator and condenser compartments for inducing air flow respectively therethrough and oriented with their rotational axes extending front

to rear in said cabinet, an electric motor coaxially disposed between said blowers and having a drive shaft on which said blowers are fixedly drivingly mounted for direct rotation therewith for concurrent operation thereof, and a rotary hermetic compressor disposed in a cylindrical casing and oriented with its longitudinal axis generally horizontal generally parallel to said blower axes and with its maximum vertical dimension below that of said blowers to thereby reduce the overall vertical dimension of said unit components to provide a low profile cabinet.

4,641,503

OUTDOOR UNIT FOR AN AIR CONDITIONING APPARATUS OF THROUGH-THE-WALL MULTITYPE

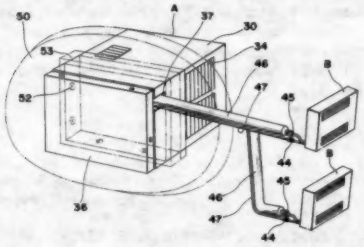
Tadashi Kobayashi, Urawa, Japan, assignor to Daikin Industries Ltd., Osaka, Japan

Filed Dec. 17, 1985, Ser. No. 809,874

Claims priority, application Japan, Jan. 19, 1985, 60-5947[U]

Int. Cl.⁴ F25D *23/12*

U.S. Cl. 62—259.1 **7 Claims**



1. An air conditioning apparatus comprising an outdoor unit for mounting within an opening extending from an interior wall to an exterior wall of a building and at least one indoor unit for mounting within a room of the building, said outdoor unit comprising:

an outdoor unit casing, having a front portion and a rear portion, for mounting within the opening extending from an interior wall to an exterior wall of a building;

a tray removably provided within said casing;

a sectioning means provided on said tray for sealing said forward portion from said rearward portion of said casing;

an outdoor unit air conditioning means for controlling and changing the temperature of a circulation fluid that is circulated to said at least one indoor unit, said outdoor unit air conditioning means is provided in the rear portion of said casing, said outdoor unit air conditioning means is supported by said tray;

an electrical control means for controlling the operation of said outdoor unit air conditioning means, said electrical control means is provided in the front portion of said casing, said electrical control means is supported by said tray;

an outdoor unit connection means for releasably coupling said outdoor unit air conditioning means of said outdoor unit to said at least one indoor unit, said outdoor unit connection means is provided in the front portion of said outdoor unit casing, said outdoor unit connection means is supported by said tray;

a front cover means, at least partially removable from said outdoor unit casing, for providing an individual quick and easy access to said forward portion of said outdoor unit for releasably coupling said outdoor unit to said at least one indoor unit by means of said outdoor unit connection means, for allowing the individual quick and easy access to said electrical control means, and for providing an opening in said outdoor casing for removal of said tray supporting said outdoor unit air conditioning means, said electrical control means and said outdoor unit connection means as a unit.

4,641,504

YARN HEATING CHAMBER

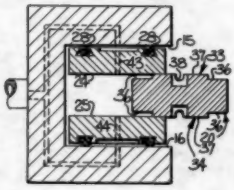
Walter Runkel; Erich Lenk, and Karl Bauer, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Jun. 11, 1985, Ser. No. 743,436

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3422031

Int. Cl.⁴ D06B *3/04*

U.S. Cl. 68—5 E **13 Claims**



1. A heating chamber for thermally processing an advancing yarn, and comprising

a housing having a pair of transversely spaced apart and parallel side walls which extend in the longitudinal direction, with each of the side walls including generally parallel, inwardly facing side wall surfaces,

a pair of longitudinally extending outer plates disposed between said side walls, with each of said outer plates having an outer surface opposing the inwardly facing side wall surface of the adjacent side wall, and an opposite, inner surface,

a longitudinally extending central plate disposed between said outer plates and having opposite outer surfaces opposing respective ones of the inner surfaces of the two outer plates, with each of the opposite outer surfaces of the central plate including a discontinuity extending along the longitudinal length thereof, and with said central plate being laterally movable with respect to said two outer plates for movement between an operative position wherein the opposing surfaces of said plates overlie each other and said discontinuities define a relatively narrow yarn passage on each side of said central plate, and a threading position wherein said discontinuities are separated from the inner surfaces of said two outer plates to facilitate threading of yarns into the discontinuities,

heating duct means for introducing a hot pressurized vapor into said yarn passage when said plates are in the operative position, and

means for biasing said two outer plates inwardly toward each other so as to resiliently engage said central plate therebetween when in said operative position wherein each of said inwardly facing side wall surfaces and the opposing outer surface of the adjacent outer plate define a contact pressure gap therebetween, and said biasing means comprises a portion of said heating duct means which communicates with each of said gaps for conducting a portion of said hot pressurized vapor thereto.

4,641,505

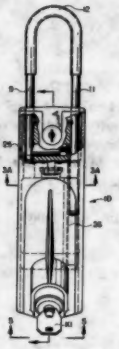
SECURITY DEVICE FOR REAL ESTATE BROKERS

Thomas A. Maurice, 9111 Orangevale Ave., Orangevale, Calif. 95662

Continuation-in-part of Ser. No. 433,981, Dec. 27, 1982, Pat. No. 4,532,783. This application Mar. 1, 1985, Ser. No. 707,383

Int. Cl.[4] E05B *65/48*

U.S. Cl. 70—63 **22 Claims**



1. A lock comprising, in combination, a housing having an interior and a portal communicating said interior with areas external said housing,

said portal having two sides provided with opposed facing trackways,

a sliding door cover dimensioned to occlude said portal by sliding within said trackways,

a solidary locking means fixedly securing said sliding door on said housing, actuation of said solitary locking means moving said cover from locking engagement with said housing to exposing said housing interior,

a shackle supported by said housing having a first segment extending beyond said housing and a second segment within said housing yet not accessible from said housing interior,

whereby access to said interior does not provide communication with said shackle second segment,

and shackle locking means passing through said housing isolated from said interior and operatively connected to lock and unlock said shackle,

said shackle locking means inaccessible from said interior to thereby provide two distinct locking systems.

4,641,506

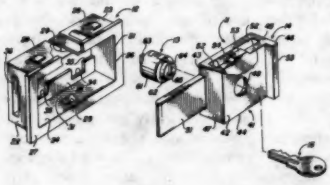
SLIDING BOLT LOCKING DEVICE

James E. Boucher, Leominster, Mass., assignor to Hudson Lock, Inc., Hudson, Mass.

Filed Apr. 9, 1985, Ser. No. 721,413

Int. Cl.[4] E05B *65/06*

U.S. Cl. 70—129 **11 Claims**



1. A locking device comprising:

housing means adapted for mounting in one part of an enclosure so as to be fixed to and immovable with respect thereto, said housing defining first and second engagement surfaces;

bolt means retained by said housing means and adapted for reciprocating movement therein between open and latched positions; said bolt means comprising a latch portion adapted when in said latched position to engage another part of the enclosure movable relative to the one part thereof;

a key operated cylinder lock retained by and movable with said bolt means during said reciprocating movement, said lock being rotatable between locked and unlocked positions; and

a locking member retained by and movable both reciprocally and rotationally with said lock and adapted to be engaged with said first and second engagement surfaces and prevent said reciprocating movement of said bolt means with said lock in said locked position; and to be disengaged from said first and second engagement surfaces to allow said reciprocating movement of said bolt means with said lock in said unlocked position and wherein said first engagement surface engages said locking member with said lock in said locked position and said bolt means in said latched position and said second engagement surface engages said locking member with said lock in said locked position and said bolt in said open position.

4,641,507

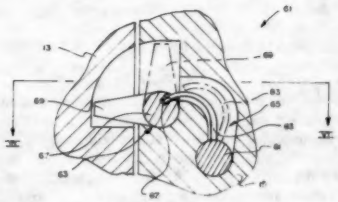
LOCK MECHANISM

Betty J. Demonbreun, Memphis, Tenn., assignor to W. Stuart McCloy, Jr. and W. Stuart McCloy, Sr., both of Memphis, Tenn.

Filed Feb. 6, 1984, Ser. No. 577,517

Int. Cl.[4] E05B *35/12*; E05G *3/00*

U.S. Cl. 70—339 **2 Claims**



1. A lock mechanism for preventing unauthorized entry through a door member of the type movably associated with a door jamb, said lock mechanism comprising:

(a) first lock means movably associated with said door jamb for movement between a locked position in which said door member is locked in a closed position and an unlocked position; said first lock means including a body member and including a lug member mounted relative to said body member thereof for extending between said door jamb and said door member when said first lock means is in said locked position, said first lock means having two cavities that are aligned along said body member thereof; and

(b) second lock means movably associated with said first lock means for movement between a locked position in which said first lock means is locked in said locked position and an unlocked position; said second lock means including a body member and including two arms that are aligned along said body member thereof and that are fixedly mounted on said body member thereof and extending outwardly thereof for lockably engaging said body member of said first lock means by extending into respec-

tive ones of said cavities of said first lock means when said second lock means is in said locked position.

4,641,508

LOCK WITH BOLT ENLARGEMENT

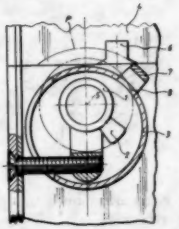
Dieter Günther, Berlin, Fed. Rep. of Germany, assignor to Zeiss Ikon Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 25, 1985, Ser. No. 758,823

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1984, 3427970

Int. Cl.⁴ E05B *17/04*

U.S. Cl. 70—380 **3 Claims**



1. A lock having:
a lock beard;
a rotatable ring surrounding said lock beard, said ring having a recess for engagement by said lock beard, whereby said ring rotates with said lock beard upon engagement therewith;
a stop formed on said ring;
a bolt having a tumbler plate and said tumbler plate having a notch formed therein for cooperation with the stop formed on said ring;
said lock characterized in that:
said lock beard, said ring and said bolt and tumbler plate all lie in one plane;
the radius described by said lock beard upon rotation is less than the distance between the rotational axis of the lock beard and the parallel sides of the bolt notch in said tumbler plate;
said stop is provided on the outside circumference on said ring and is engageable with said bolt notch;
a rotatable lock cylinder having said lock beard therein, said cyclinder rotatable about said rotational axis; and
said ring surrounding said lock cylinder being rotatable about a different axis.

4,641,509

MASTER KEYBOARD

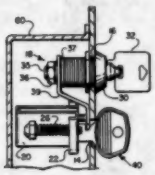
Ronnie K. Batchelor, 109 S. Carolina Ave., Spencer, N.C. 28145, and Ronnie R. Rowe, 207 Eastwood Dr., Salisbury, N.C. 28144

Filed Oct. 16, 1985, Ser. No. 787,958

Int. Cl.⁴ E05B *11/00*

U.S. Cl. 70—388 **11 Claims**

1. A device for the retention, protection and control of keys, comprising:
a. a face plate being provided with at least one slot adapted to receive at least one key having a notch adjacent the head of such key adapted to accept an arm of a universal locking mechanism;
b. a universal locking mechanism fixed to said plate, spaced from and associated with such slot, such locking mechanism being controllable by a universal key, said mechanism carrying a stop means thereon;
c. a receptacle associated with and mounted about said slot on the reverse side of said plate to receive said at least one key;
d. biasing means attached to the reverse side of said plate and engaging said receptacle for urging said receptacle toward said plate;
e. an arm fixed to the universal locking mechanism on the reverse side of said plate, and adapted to move into a first position to cover a portion of said slot and engage said



notch on said at least one key when at one limit of its movement, and to move to a second position remote from said slot when at the other limit of its movement; and
f. a movement limiting means associated with said arm for engagement with said stop means at the limit of movement of said arm.

4,641,510

ELECTROMAGNETICALLY OPERATED PEENING TOOL

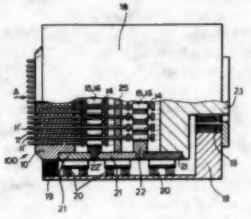
Rainer Mitsching, Mehring, and Heinz Nennstiel, Koenigsbrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Oct. 28, 1985, Ser. No. 791,790

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1984, 3442089

Int. Cl.⁴ B21J *7/16*

U.S. Cl. 72—53 **12 Claims**

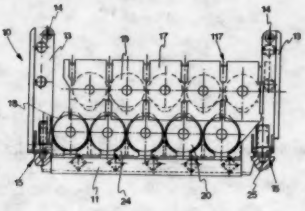


1. An electromagnetically operated peening tool, comprising housing means, a plurality of peening needles for work hardening a work piece surface, carrier means for movably supporting and guiding said peening needles in said housing means, electromagnetic drive means for operating said peening needles in a back and forth movement, each peening needle having its own magnetic needle armature for cooperation with said electromagnetic drive means, each peening needle further having a tool end extending out of said carrier means for impacting a work piece surface.

4,641,511
STRAIGHTENING MACHINES, AND STRAIGHTENING MACHINES THUS IMPROVED

Alfredo Poloni, Ronchi dei Legionari, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Nov. 2, 1984, Ser. No. 667,832
Claims priority, application Italy, Nov. 21, 1983, 83505 A/83
Int. Cl.[4] B21D *1/02, 1/14*
U.S. Cl. 72—160 **9 Claims**



1. A straightening machine for rolled, extruded, or drawn products, comprising:

a frame;

upper straightening rollers and lower straightening rollers mounted in said frame, said upper straightening rollers being offset relative to said lower straightening rollers;

carrier means mounted within said frame comprising engagement means for engaging a lifting device to vertically withdraw said carrier means from the frame, and cradle means capable of at least momentary support of at least a part of said straightening rollers;

upper and lower supports for said upper and lower straightening rollers, said upper support containing a plurality of said upper straightening rollers and said lower support containing a plurality of said lower straightening rollers, said lower supports being vertically movable with respect to said upper supports, said upper and lower supports having cooperating faces which engage each other at least momentarily during withdrawal of said carrier means from the frame; and

means on said frame and carrier for at least momentarily positioning said carrier means on said frame by engagement of said carrier means with said frame.

4,641,512
PLANT TO FORM AND COOL COILS

Antonino Durí , Pradamano, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Italy

Filed Aug. 30, 1985, Ser. No. 771,041
Claims priority, application Italy, Sep. 19, 1984, 60460/84[U]
Int. Cl.[4] B21B *43/04;* B21F *21/00;* C21D *8/06*
U.S. Cl. 72—201 **6 Claims**

1. A plant to form and cool metal coils, comprising:

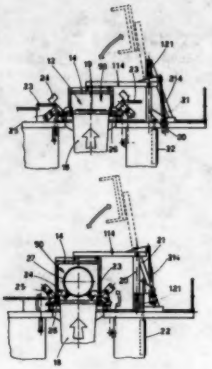
a conveyor for horizontal coils;

conveyor means for vertical coils located adjacent said conveyor adapted to convey vertical coils directly above said conveyor, said conveyor means being movable from an inactive to a working position;

at least one coil-forming head to form horizontal and vertical coils and place the same on one of said conveyor and said conveyor means;

a movable cooling hood having a top wall and spaced-apart depending opposed side walls, said hood being movable from a first lower position over horizontal coils on the conveyor to a second upper position over vertical coils on the conveyor means;

movable side walls adapted to move from an inactive position when said cooling hood is in its first position to a working position adjacent to and coplanar with the depending side walls of the cooling hood when the cooling hood is in its second position, whereby said movable side walls together with said hood form a cooling tunnel; and

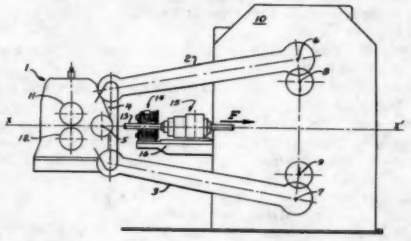


a station for receiving either horizontal or vertical coils and forming wound bundles.

4,641,513
COLD ROLLING PROCESS FOR TUBES, BY MEANS OF A PILGER ROLLING MILL AND THE ROLLING MILL FOR ITS EXECUTION

Pierre Peytavin, Neuilly, France, assignor to Vallourec, France

Filed Jul. 30, 1984, Ser. No. 635,458
Claims priority, application France, Aug. 1, 1983, 83 12922
Int. Cl.[4] B21B *21/04*
U.S. Cl. 72—214 **5 Claims**



1. A process for cold rolling a tubular blank by means of a Pilger rolling mill, the blank rolled between a mandrel lodged inside the blank and a pair of rolls supported on a stand, the process comprising the steps of:

(a) oscillating the stand parallel to the axis of the blank between a downstream neutral point and an upstream neutral point;

(b) driving the rolls in alternating directions in synchronism with the motions of the stand relative to the blank to work the blank during both downstream and upstream stand motions;

(c) moving the blank downstream relative to the stand when the stand is near the downstream neutral point; and

(d) providing holding back means downstream of the stand;

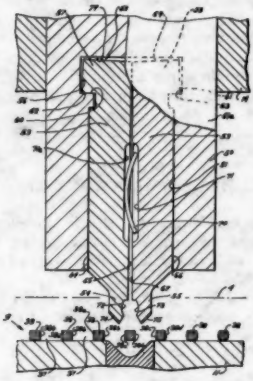
(e) holding back the blank against upstream motion, the holding back being accomplished by said holding back means

whereby upstream motion of the blank is prevented and the portion of the blank which is already rolled will be prevented from re-entering the rolling phase.

4,641,514
TOOLING FOR MANUFACTURE OF ELECTRICAL CONTACTS

John J. Rozmus, 1030 Derwydd La., Berwyn, Pa. 19312

Division of Ser. No. 295,748, Aug. 24, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 553,168
Int. Cl.[4] B21D *41/00*
U.S. Cl. 72—400 4 Claims



1. In a progressive die having punch pad and die pad bolsters relatively reciprocal along an axis and punch and die means respectively mounted thereon for stamping electrical contacts, each contact having a contact body, the tooling comprising:

a pair of closely spaced strikers, each striker having head means including an interior working surface, the working surfaces facing one another and each said head means being configured to permit entry of the heads respectively into the spaces on opposite side edges of a contact body in a strip being worked by punch and die means whereby the working surfaces can respectively engage said opposite side edges for upsetting the same and to permit exit respectively from said spaces after the working operation; and

means connected to the punch pad bolster and to the die pad bolster, said means:

(a) mounting the strikers on said punch pad bolster;

(b) providing for the strikers as mounted on said punch pad bolster to reciprocate simultaneously with the punch pad bolster, along said axis;

(c) providing for the strikers as mounted on said punch pad bolster to move toward and away from one another in a plane containing said vertical axis;

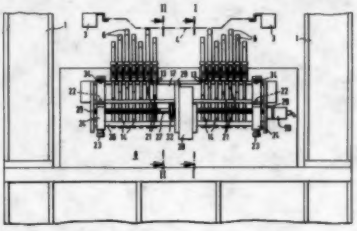
(d) providing for the strikers as mounted on said punch pad bolster to be positioned for said head means to respectively enter said spaces and to move in said plane toward one another when punch pad bolster is in the working stroke to cause the working surfaces to engage said opposite edges and upset the same to form operating surfaces thereon; and

(e) providing for the strikers as mounted on said punch pad bolster to move in said plane away from one another for said head means to disengage the working surfaces from a worked contact body and to exit from said spaces when the punch pad bolster is in the return stroke.

4,641,515
INTERMEDIATE STORAGE IN A TRANSFER PRESS

Hermann Braun, Eislingen; Helmut Dumschat, Donzdorf; Kurt Strommer, Kuchen, and Sieghard Mueller, Ottenbach, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Goeppinger, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,089
Claims priority, application European Pat. Off., Mar. 20, 1984, 84103029.9
Int. Cl.[4] B21J *13/08*
U.S. Cl. 72—405 12 Claims



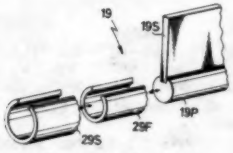
1. An intermediate storage mechanism in a transfer press installation having multiple working areas spaced apart from one another for making essentially large and different surface configuration workpieces which are conveyed to an idling stage area between said at least two working areas, comprising:

a plurality of storage template means with at least two storage template means per workpiece of different configuration, each of said at least two storage template means having a support surface means matched to a bottom surface of the same workpiece, the storage template means being liftable at least in the generally vertical direction to store a workpiece, lifting means for lifting the said at least two storage template means corresponding to the configuration of the workpiece to be stored, and at least one adjusting means operable to provide a relative movement between the at least two storage template means to be respectively lifted and the lifting means to position the lifting means into lifting position, relative to the at least two template means to be lifted.

4,641,516
BENDING TOOL

Masao Satoh, Hatano, Japan, assignor to Amada Metrecs Company, Limited, Japan

Filed Oct. 9, 1984, Ser. No. 658,703
Claims priority, application Japan, Oct. 13, 1983, 58-157297[U]
Int. Cl.[4] B21D *37/04*
U.S. Cl. 72—481 6 Claims



1. A bending tool for a press comprising:

a fixed punch having its external peripheral surface of an arcuate shape and mounted on the lower edge of a shank section of the press, the diameter of which is greater than the width of said shank section,

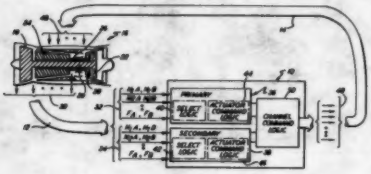
means for rigidly fixing the fixed punch to the shank section,

and a plurality of semicylindrical punches which are detachably and telescopically mounted on the fixed punch.

4,641,517
CONTROL SYSTEM ACTUATOR POSITION SYNTHESIS FOR FAILURE DETECTION

Wayne R. Spock, Canton, and Peter J. Urbanik, Wethersfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1984, Ser. No. 683,887
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 **3 Claims**



1. Apparatus for diagnosing failures in an actuator loop of a digital electronic engine control (DEEC) which controls the actuator position in each of a plurality of successive sample intervals in dependence on the difference signal magnitude between an actuator position command signal sample and an actual actuator position signal sample selected from one of two sensed actuator position signals provided from first and second position sensors associated with the actuator, comprising:

model means, for simulating the signal response of the actuator loop to the difference signal magnitude between the actuator position command signal sample and the selected actual position signal sample from a preceding sample interval, to provide a synthesized actuator position signal sample representative of the expected actuator position in a present sample interval;

signal selection means, responsive to the actual position signal samples of each sensed actuator position signal and responsive to said synthesized signal sample,

for determining the difference signal magnitude between each actual position sample and said synthesized sample to select for use by the DEEC, a first one of the actual samples whose difference value is within a maximum position difference limit,

for rejecting for use in a sample interval an actual sample having a difference signal value greater than said maximum position limit,

for providing a fail signal identifying as failed any of said position sensors providing an actual signal sample having a difference magnitude greater than said maximum limit in a successive number of sample intervals; and

recording means, for recording each of said fail signals from said selection means to provide a failure diagnosis record for the actuator loop.

4,641,518
PROCESS FOR THE NON-DESTRUCTIVE INSPECTION OF SURFACE DEFECTS

David J. Hutchings, Wiesloch, Fed. Rep. of Germany, assignor to Brent Chemicals International PLC, Buckinghamshire, Great Britain

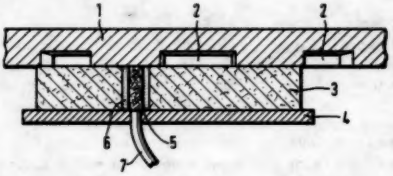
PCT No. PCT/EP84/00362, § 371 Date Jul. 25, 1985, § 102(e) Date Jul. 25, 1985, PCT Pub. No. WO85/02464, PCT Pub. Date Jun. 6, 1985
PCT Filed Nov. 16, 1984, Ser. No. 762,065
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1983, 3342855
Int. Cl.[4] G01N *21/91*
U.S. Cl. 73—104 **17 Claims**

1. A process for the non-destructive inspection of surface defects, where initially a solution with one or more dyes having substantially no emission under UV-light is applied to the surface being inspected and the excess solution is removed after the dye has penetrated the surface defects of the surface being inspected, the surface is then coated with an absorben fluorescent developer leaving behind an absorbent fluorescent developer coating that in daylight is in high contrast to the color to the color of the dye initially applied and contains at least one fluorescent component such that the absorbent fluorescent developer coating fluoresces under UV-light, so that when UV-light is applied to said surface being inspected its surface defects appear thereunder as blackened portions within the lightemitting ambient resulting from fluorescing by the absorbent fluorescent developer coating, the improvement being that the absorbent fluorescent developer used has its at least one fluuoescent component exclusively constituted by at least one optical brightener in a proportion between 0.02 and 2.0% by weight of the total absorbent fluorescent developer weight.

4,641,519
DEVICE FOR THE DETERMINATION OF ROTATIONAL SPEED

Hans-Christof Klein, Hattersheim; Ulrich Armonier; Hermann Oesterle, both of Lauf, and Juergen Jendroska, Liederbach, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 15, 1985, Ser. No. 755,680
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425825
Int. Cl.[4] G01L *5/28*
U.S. Cl. 73—129 **17 Claims**



1. A device for determining the rotational speed of a rotating component, in particular of a brake disc of an automotive vehicle brake, said brake disc containing recesses shaped at preferably regular angular distances and lying opposite to a probe, wherein a contact element (5) is employed as the probe which is movable into abutment on the brake disc (1) and which, when overriding each recess (2), interrupts an electric circuit comprising an evaluation circuit.

4,641,520
SHEAR WAVE TRANSDUCER FOR STRESS MEASUREMENTS IN BOREHOLES

Nai-Hsien Mao, Castro Valley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1984, Ser. No. 643,348
Int. Cl.[4] G01V *1/40; E21B 49/00*
U.S. Cl. 73—151 **8 Claims**

1. A method for determining stress around a borehole, comprising:

generating a radially polarized shear wave in the borehole at two positions spaced apart by 90°;

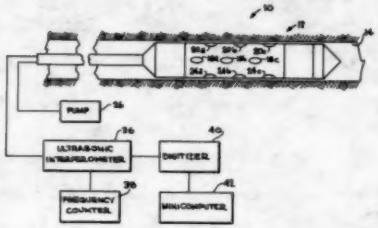
transmitting the radially polarized shear waves in a direction along the borehole;

measuring the velocity of the radially polarized shear waves;

generating a tangentially polarized shear wave in the borehole at two positions spaced apart by 90°;

transmitting the tangentially polarized shear waves in a direction along the borehole;

measuring the velocity of the tangentially polarized shear waves;



calculating the stress induced shear wave velocity anisotropy from the measured velocities; and

calculating the stress from the shear wave velocity anisotropy according to a predetermined relationship.

4,641,521

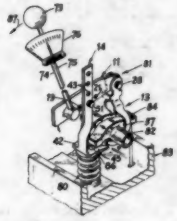
VALVE-SPRING TOOL

Manuel Lawrence, 32 Lanovette St., Meriden, Conn. 06450

Filed Mar. 4, 1985, Ser. No. 708,024

Int. Cl.[4] G01M *13/00*; G01L *1/04*

U.S. Cl. 73—161 **6 Claims**



1. A tool having particular utility for testing the tension characteristics of a valve spring mounted with a valve spring washer about a valve stem on an engine having a respective rocker arm mounted on a pedestal, comprising:

an elongate base member having a beam configuration;

first attachment means being pivotally attachable to a first end portion of said base member, and having a downwardly extending arm member with a pair of lower anchor prongs extending in a direction generally normal to said arm member, said pair of anchor prongs being dimensioned to enable each being insertable between the engine pedestal and the valve spring rocker arm;

second attachment means being pivotally attachable to an intermediate portion of said base member, and having a downwardly extending second arm member with a pair of compressor prongs extending in a direction generally normal to said second arm member and generally normal to the extended direction of said pair of anchor prongs, said pair of compressor prongs being dimensioned for being insertable between a portion of the rocker arm and the valve spring washer with each one of said pair of compressor prongs being disposed on a respective side of the valve stem, and having a lower plate member extending outwardly from said arm member in a direction opposite to the extended direction of said compressor prongs and having an elongate slot, and having an adjustment means extending through said elongate slot and being adjustable for selectively extending a member in selected vertical disposition; and

a torque wrench means attachable to said base member and being manually actuable for causing said base member to pivot at said first attachment means so that said second attachment means being urged downwardly to depress the valve spring without depression of the valve stem, and having means for indicating the torque to depress the valve spring.

4,641,522

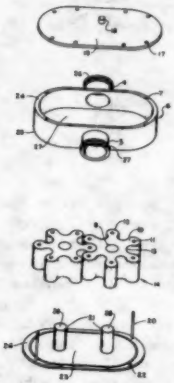
BEARING-LESS POSITIVE DISPLACEMENT FLOWMETER

William J. Lopresti, 15935 Notting Hill Dr., Lutz, Fla. 33549

Filed Apr. 3, 1985, Ser. No. 719,418

Int. Cl.[4] G01F *3/10*

U.S. Cl. 73—261 **13 Claims**



1. A fluid metering apparatus comprising,

a chamber comprising an oblated chamber having two opposed radiused portions separated by two opposed linear portions and

first and second flat end plates connected to opposite end faces of the oblated chamber,

a fluid inlet disposed in one of the two opposed linear portions of the oblated chamber,

a fluid outlet disposed in the other of the two linear portions of the oblated chamber, the inlet and outlet having an axis bisecting the chamber,

two non-metallic intermeshing rotors, each having a plurality of singly radiused lobes equidistantly spaced apart by singly radiused nadirs, rotatably mounted within the chamber in intermeshed relationship between the first and second flat plates, the rotors having overall radii corresponding to the radiused portions of the oblated chamber and the radiused lobes being in the radiused portion of the oblated chamber, and intermeshing at a point near a center of the chamber, whereby fluid entering the chamber through the inlet causes the lobes of corresponding rotors to move in a rotary direction,

marker means, disposed in each of the plurality of lobes, and

single pickup and indicating means, on a plate in the center of the chamber adjacent the marker means, and responsive to the marker means in both rotors for picking up passage of the markers and for indicating a quantity of electrical signals for both lobe means, the quantity being determined proportionate to rotational speed of the two rotors, said chamber acting as a guide for said rotors and restricting each to rotary movement.

4,641,523

LIQUID LEVEL GAUGE

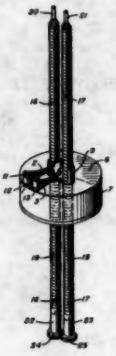
Jan Andreasson, Mullsjö , Sweden, assignor to Skandiafabriken AB, Mullsjo, Sweden

Filed Dec. 20, 1984, Ser. No. 684,366

Claims priority, application Sweden, Jan. 4, 1984, 8400037; Nov. 13, 1984, 8405679

Int. Cl.[4] G01F *23/60*

U.S. Cl. 73—313 **13 Claims**



1. In a liquid level indicator system having a resistance component, a contact component adjustably engaging said resistance component, and a float mounted for movement relative to said resistance component for adjustably varying the engagement of said contact component with said resistance component upon movement of said float; the improvement comprising the resistance component including two vertically elongate bodies, said bodies being in parallel laterally spaced relation to each other, each of said bodies terminating in opposed ends generally coextensive with the ends of the other body, and an outer electrically conductive layer about each body between the opposed ends thereof, the float surrounding said elongate bodies for vertical movement therealong, said float comprising opposed parallel spaced end discs with a guide means therebetween, said end discs having aligned apertures therethrough slidably receiving the eongate bodies through said guide means and precluding relative rotation between the float and the elongate bodies, and the contact component comprising two conductive contacts in electrical contact with each other, each contact engaging against a separate one of said electrically conductive layers on the bodies, and means fixing said contacts to said float for vertical movement therewith along said vertically elongate bodies.

4,641,524

OPTICAL HUMIDITY SENSOR

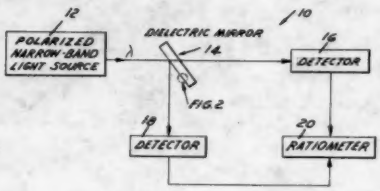
Jeffrey A. Tarvin, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Aug. 15, 1985, Ser. No. 765,727

Int. Cl.[4] G01W *1/00*

U.S. Cl. 73—335 **17 Claims**

1. A humidity sensor comprising porous dielectric means for adsorbing moisture from a surrounding atmosphere, a narrow-band light source for directing light energy onto said dielectric means at preselected nominal wavelength, said porous dielectric means comprising at least one layer of porous dielectric construction having quarter-wave thickness as a function of said preselected nominal wavelength and index of refraction of said porous dielectric construction, and means positioned to intercept light energy incident on said dielectric means from said source for indicating humidity in the atmosphere surrounding said dielectric means as a function of variations in



light transmission/reflection characteristics of said dielectric means.

4,641,525

METHOD AND APPARATUS FOR CHECKING THE WALL THICKNESS OF A LAYER

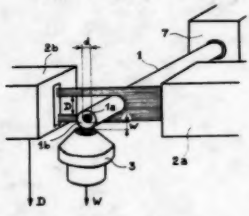
Hubert Merki, Brewster, N.Y., assignor to Zumbach Electronic AG, Orpund, Switzerland

Filed Jun. 10, 1985, Ser. No. 743,298

Claims priority, application Switzerland, Jun. 18, 1984, 2939/84

Int. Cl.[4] G01B *7/10*

U.S. Cl. 73—432.1 **16 Claims**



1. A method of checking the wall thickness of a layer wherein the wall thickness is measured at various points of the layer by determining the distance of a coated inner part from the accessible outer surface of the layer, to ascertain maxima and minima of the measured distance values, whereby in addition to said maxima and minima of the wall thickness, at least maxima and minima of one external dimension of a member embodying said layer, this external dimension being simultaneously measured, and data relating to at least one further quantity is derived from the difference between said maxima and minima of the wall thickness and the difference between said maxima and minima of the external dimension, for minimizing the effect of drift and non linearity upon said measured wall thickness values and said external dimension values.

4,641,526

METHOD AND APPARATUS FOR ESTIMATING SOUND SOURCE POSITION

Shigeru Izumi, Tokyo; Makoto Senoh, Ibaraki; Koji Tsumaki, Hitachi, and Kenji Miyata, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,500

Claims priority, application Japan, Jun. 6, 1983, 58-99401

Int. Cl.[4] G01N *29/00*

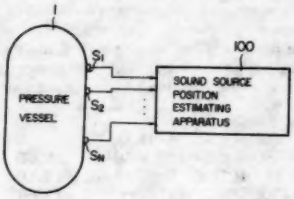
U.S. Cl. 73—572 **11 Claims**

1. An apparatus for estimating a position of a sound source, comprising:

(a) a plurality of sound detecting means installed on a structure with a predetermined spacing for detecting a sound generated at a location in said structure;

(b) first storage means for storing at least one of peak value data and signal arrival time data of sound signals originating in at least one known sound source position in said structure and obtained through said sound detecting means;

(c) second storage means for storing a correspondence table indicating relations between pattern differences between said known sound source position and a number of predetermined positions of said structure and the real distances between said known sound source position and said number of predetermined positions;



(d) pattern difference calculating means for arithmetically determining pattern differences on the basis of data stored in said first storage means and data of the sound signals originating in said unknown sound source position and detected through said detecting means which corresponds to data stored in said first storage means; and

(e) signal processing means for reading said real distances from said correspondence table stored in said second storage means on the basis of the pattern differences arithmetically determined by said pattern difference calculating means.

4,641,527

INSPECTION METHOD AND APPARATUS FOR JOINT JUNCTION STATES

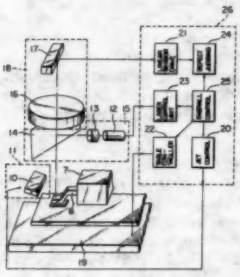
Takashi Hiroi; Takanori Ninomiya, both of Yokohama, and Yasuo Nakagawa, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar., 1985, Ser. No. 707,501

Claims priority, application Japan, Jun. 4, 1984, 59-112960; Sep. 7, 1984, 59-186331

Int. Cl.[4] G01N *29/04*

U.S. Cl. 73—582 **18 Claims**



2. An inspection method for joint junction states comprising the steps of:

applying a vibration in a contactless fashion to a first object jointed to a second object;

applying a turbulence to said vibration applied to said first object;

optically detecting a vibratory state of said first object in a contactless fashion; and

analyzing the detected vibratory state of said first object to determine the state of the joint junction of said first object to said second object.

4,641,528

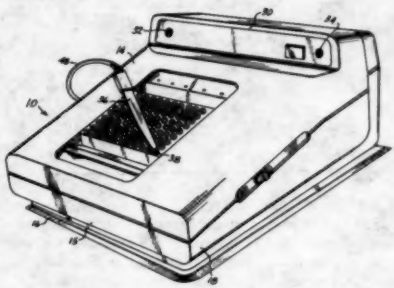
SPECIMEN ANALYSIS INSTRUMENT ASSEMBLY

John W. Clayland, Jr., Placerville, and Carl P. Daniel, El Dorado Hills, both of Calif., assignors to American Hospital Supply Corp., Deerfield, Ill.

Filed Sep. 16, 1985, Ser. No. 776,200

Int. Cl.[4] C12M *1/34*; G01S *5/18*

U.S. Cl. 73—597 **8 Claims**



1. An assembly for identifying the results of a specimen analysis wherein such specimen analysis occurs in an array of discrete cells, the assembly comprising:

a housing having top, bottom, end walls, and sidewalls;

an array receiving means on the top wall for receiving and holding an array of discrete cells in a fixed position;

an ultrasonic signal producing means for selectively producing an ultrasonic signal adjacent a cell in the array in which the results of the analysis are to be identified and for providing an initializing electrical signal;

a first transducer means on the top wall for converting an ultrasonic signal from the ultrasonic signal producing means to a first electrical signal;

a second transducer means on the top wall for converting an ultrasonic signal from the ultrasonic signal producing means to a second electrical signal; and

conversion means electrically operatively connected to the ultrasonic signal producing means, the first transducer means, and to the second transducer means for comparing the initializing electrical signal to the first electrical signal and second electrical signal to identify the cell above which the ultrasonic signal was produced.

4,641,529

PIPELINE INSPECTION DEVICE USING ULTRASONIC APPARATUS FOR CORROSION PIT DETECTION

Donald E. Lorenzi; Helmut F. Wagerer, both of Des Plaines, and Lev Spevak, Chicago, all of Ill., assignors to Magnaflux Pipeline Services, Inc., Stamford, Conn.

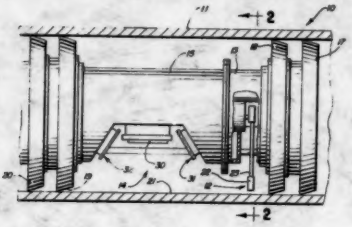
Filed Apr. 12, 1984, Ser. No. 599,481

Int. Cl.[4] G01N *29/04*

U.S. Cl. 73—601 **6 Claims**

1. In a device for pipeline inspection, ultrasonic apparatus including ultrasonic transducer means for transmitting ultrasonic energy to the internal surface of a pipeline and for receiving energy therefrom to develop electrical signals, and detector means for responding to said electrical signals to produce output signals in response to corrosion pits in said internal surface of the pipeline, photographic apparatus for producing a photograph of a portion of the internal surface of the pipeline, support and drive means for supporting said ultrasonic apparatus and said photographic apparatus for movement

within the pipeline, and control means for controlling operation of said apparatus from output signals of said detector means to produce photographs of portions of the pipeline having corrosion pits detected by said ultrasonic apparatus, said support and drive means comprising a central housing section, and forward and rearward resilient cup means secured to forward and rearward ends of said central housing section, said photographic apparatus being supported in said central housing section to operate in a protected space between said



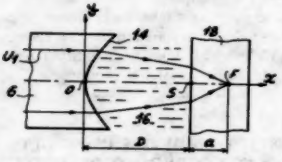
forward and rearward cup means, said ultrasonic transducer means being located between said forward and rearward cup means, and said ultrasonic transducer means being located behind said forward cup means and forwardly with respect to said photographic apparatus, and delay means for responding to said output signals to operate said photographic apparatus after a time delay approximately equal to the time required for said device to travel a distance equal to the longitudinal distance from said ultrasonic transducer means to a central viewing axis of said photographic apparatus.

4,641,530

ACOUSTIC MICROSCOPE FOR ANALYZING AN OBJECT IN DEPTH HAVING ASPHERICAL LENSES

Jacques Attal, Montpellier, and Gaston Cambon, St. Gely du Fesc, both of France, assignors to Centre National de la Recherche Scientifique, France

Filed Sep. 12, 1985, Ser. No. 775,268
Claims priority, application France, Sep. 12, 1984, 84 13988
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—606 **5 Claims**



1. An acoustic microscope permitting the analysis of an object in depth comprising two identical bars positioned in an extension of one another and provided at their facing ends with a cavity, said cavities defining at least one focussing lens and at least one objective lens, said two identical lenses having coinciding foci being linked by a liquid drop in which the object to be analysed can be immersed, the bars being provided at their other ends with a piezoelectric transducer, said transducers being able to produce ultrasonics focussed within the object by the focussing lens and to detect ultrasonics reflected or transmitted by the object via the objective lens, means for analysing the ultrasonics reflected or transmitted by the object and means for displacing the object in the focal plane of the two lenses, wherein the lenses have in each case a shape defined by the parametric equations:

$$x = N\frac{\left[D + na - \frac{na}{\cos r}\right]\cos\left[\text{Arc}\sin(n\sin r)\right] - D}{\cos\left[\text{Arc}\sin(n\sin r)\right] - N} \quad \text{and}$$

$$y = a\,tg\,r + (D - x)\,tg\left[\text{Arc}\cdot\sin(n\sin r)\right]$$

in which N represents the relative refractive index n_2/n_1, n_1 being the index of the material forming the bars and n_2 the index of the liquid, n representing the relative refractive index n_3/n_2, in which n_3 is the index of the material forming the object, D represents the distance between the vertex of the lens and the surface of the object, a the distance between the surface of the object and the focal point of the lens and r the parameter, x being taken along the optical axis of the lens and y along the axis perpendicular to said optical axis.

4,641,531

ULTRASONIC INSPECTION APPARATUS AND METHOD FOR LOCATING MULTIPLE DEFECTS IN ECCENTRIC WALL TUBULAR GOODS

Roger D. Reeves, 821 Pinegrove, Longview, Tex. 75604, and Dale F. Hawkey, #8-205-Chatelain Drive, St. Albert, Canada

Filed Mar. 27, 1986, Ser. No. 844,513
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—622 **10 Claims**

1. An ultrasonic inspection apparatus for locating multiple defects in eccentric wall tubular goods, comprising:

a plurality of ultrasonic transducers arranged in mated pairs, each of the mated pairs comprising a sender element for transmitting an ultrasonic shear wave which travels in a first direction along the tubular goods being examined, and a receiver element for receiving a reflected ultrasonic wave component from the tubular goods and for transforming it into an electrical signal; and

wherein each sender element is a point focus transducer having sufficiently high resolution to maintain detectability of defects in the tubular goods and wherein each receiver element is a wide focal width transducer having a large effective beam width area to compensate for eccentricity in the wall of the tubular goods.

4,641,532

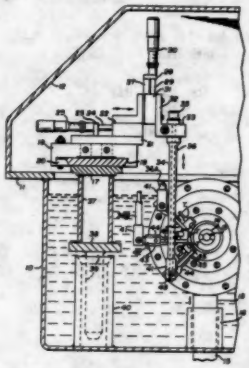
APPARATUS FOR ADJUSTABLY MOUNTING ULTRASONIC TESTING DEVICES

Edwin H. Rohrer, Springfield Township, Clark County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 27, 1984, Ser. No. 686,806
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—637 **7 Claims**

1. An improvement in apparatus for adjustably mounting an ultrasonic testing device in an ultrasonic tester having an open top container with an opening in a peripheral wall thereof, means in said opening for positioning a rod having a weld area to be tested in said container, first support means mounted on said container and extending over and depending into said container and movable horizontally and vertically; the improvement comprising adjustable second support means on said first support means forming an arcuate path on a portion of

a circle centered on said weld area of said rod and on a common plane with said rod and third support means positioning said ultrasonic testing device on said arcuate path whereby the focal depth of said ultrasonic testing device is uniformly focused on said weld area to be tested when said third support means and said ultrasonic testing device thereon are moved on said arcuate path and liquid in said container at a predetermined elevation.



4,641,533

PRESSURE MEASURING APPARATUS

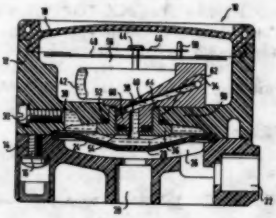
Fritz Mueller, Ingelfingen-Criesbach, and Lothar Pienta, Ingelfingen, both of Fed. Rep. of Germany, assignors to Gebrueder Mueller Apparatebau GmbH & Co. KG, Ingelfingen-Criesbach, Fed. Rep. of Germany

Filed Nov. 21, 1985, Ser. No. 800,542

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1984, 3442624

Int. Cl.[4] G01L *7/04, 7/08*

U.S. Cl. 73—706 **6 Claims**



1. Apparatus for measuring the pressure of a fluid; comprising:

a manometer having a casing;

diaphragm means for transmitting the pressure of the fluid to said manometer, said diaphragm means being directly incorporated within said casing of said manometer and forming with the latter an integrated unit wherein said diaphragm means includes a diaphragm separating a first chamber in said casing from a second chamber, said first chamber being filled with a transfer fluid and said second chamber containing the fluid whose pressure is to be measured, said casing including an upper casing portion and a lower casing portion connected to each other, said diaphragm having a circumference clamped between said upper and lower casing portions;

measuring means accommodated within said upper casing portion, said casing being completely filled with said transfer fluid above said diaphragm up to said measuring means wherein said upper casing portion is provided with an radially inwardly extending collar provided with a central opening and arranged above said diaphragm; and

support means projecting into said opening to seal said first chamber from a remaining upper space within said upper casing portion, said support means including a manometer carrier having an extension piece projecting into said opening at a distance to said collar, a retaining ring connected to said extension piece to close said opening and a pair of gaskets to seal off said remaining upper space from said first chamber.

4,641,534

HOLDING DEVICE

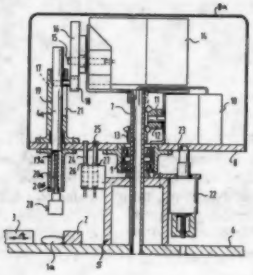
Ortwin Schneider, Weiterstadt, and Nikolaos Georgitsis, Heusenstamm, both of Fed. Rep. of Germany, assignors to Erweka Apparatebau GmbH, Heusenstamm, Fed. Rep. of Germany

Filed Oct. 1, 1985, Ser. No. 782,503

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1985, 8516163[U]

Int. Cl.[4] G01N *3/02*

U.S. Cl. 73—856 **16 Claims**



1. A holding device for holding test samples, in particular tablets, in a testing station for measuring the breaking strength of the test samples comprising

a supporting structure carrying a movable mounting support supporting a plurality of press pads which are adapted to the shapes of the test samples, each press pad being adapted to one particular sample shape, and which press pads are adapted to hold said test samples on a base plate,

a drive means for moving said mounting support in such a manner that the press pad suitable for the respective sample is brought into an operating position in the testing station, and

lowering means for lowering the respective press pad just being in the operating position down to the base plate in order to hold said sample in said testing station.

4,641,535

FLOWMETER

Salvatore C. Malguarnera, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Jun. 28, 1985, Ser. No. 750,097

Int. Cl.[4] G01F *1/36*; G01N *9/26, 11/04*

U.S. Cl. 73—861.01 **21 Claims**

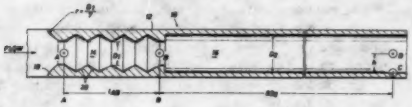
1. A flowmeter having no moving parts and enabling determination of the density, flow rate and viscosity parameters of an unknown fluid, said flowmeter comprising:

an elongated cylindrical member defining a constricted portion of a first diameter and an adjacent downstream full diameter portion of a second larger diameter;

first and second pressure sensors fixed, respectively, at the entry and the exit of said constricted portion; and

third and fourth pressure sensors fixed in said full diameter

portion at a distance of at least eight times the second diameter from the junction of said constricted and said full diameter portions, wherein said fourth pressure sensor is aligned with said third pressure sensor in a plane extending normal to the axis of said meter whereby differential pressure readings can be obtained and used to determine the density, flow rate and viscosity of a fluid passing therethrough.



4,641,536

ELECTROMAGNETIC FLOW METER

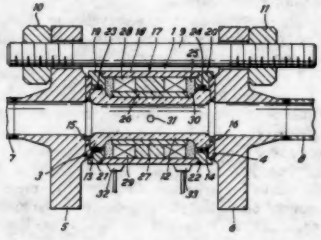
Hans E. Jacobsen; Henning M. Hansen, both of Nordborg; John Nyrup, Sonderborg; Henry Hansen, Gråsten, and Konstantin Lassithiotakis, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jun. 13, 1985, Ser. No. 744,230

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1984, 3423921

Int. Cl.⁴ G01F *1/38*

U.S. Cl. 73—861.12 **2 Claims**



1. An electromagnetic flow meter, comprising, a tubularly shaped ceramic measuring tube, tubularly shaped housing means surrounding said measuring tube in spaced relation thereto to provide a hollow space therebetween, a pole shoe and coil arrangement of a magnetic system mounted in said hollow space in operable relation to said measuring tube, said measuring tube having two radially outwardly projecting flanges at opposite ends thereof, said housing means having radially inwardly projecting flanges with surface in radial aubtting and sealing engagement with surfaces of said tube flanges, and annularly shaped sealing disks provided at both ends of said tube and housing means in axially abutting and sealing engagement with said tube and said housing means to form a pressure tight capsule, there being circumferential seals provided between said abutting tube and housing flange surfaces.

4,641,537

ELECTROMAGNETIC FLOW METER

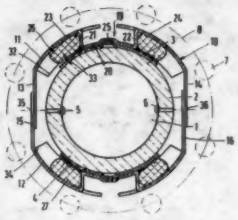
Henning M. Hansen; Hans E. Jacobsen, both of Nordborg; Henry Hansen, Gråsten; Konstantin Lassithiotakis, Langeskov; Allan S. Pedersen, and John Nyrup, both of Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jan. 16, 1986, Ser. No. 819,383

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1985, 3501768

Int. Cl.⁴ G01F *1/58*

U.S. Cl. 73—861.12 **8 Claims**



1. An electromagnetic flow meter, comprising, a cylindrically shaped tube section, two magnetic poles each having a core section carrying a winding attached to the outside of and on diametrically opposite sides of said tube section, each of said poles having a pole shoe curved to fit the curvature of said tube section, two outer yoke members formed of sheet metal and having casing portions thereof in surrounding relation to said tube section, each said yoke member being formed with a U-shaped section to form said core section having legs which join the corresponding one of said casing portions and which includes a central web section in abutting engagement with the corresponding one of said pole shoes, and each said winding having substantially rectangular coils disposed between the corresponding one of said pole shoes and the corresponding ones of said outer yoke member casing portions.

4,641,538

LIGHTWEIGHT ELECTRONIC TORQUE WRENCH

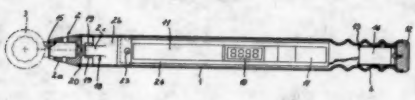
Georges Heyraud, Saint Just Malmont, France, assignor to Forges Stephanoises S.A., Saint-Etienne, France

Filed Jul. 22, 1985, Ser. No. 757,613

Claims priority, application France, Jul. 23, 1984, 84 11916

Int. Cl.⁴ B25B *23/142*

U.S. Cl. 73—862.26 **6 Claims**



1. An electronic torque wrench comprising:

a rigid metallic sleeve of generally regular section extending along a tool axis and having a front end and an opposite handle end;

a holder integrally formed with

a flat rear part extending generally diametrally of the axis in the front end of the sleeve and having a pair of outer edges radially outwardly engaging the sleeve in surface contact,

a front socket part adapted to receive a wrench fitting engageable with the element to be torqued and wholly out of contact with the sleeve, and

a flat intermediate web part interconnecting the front and rear parts, extending diametrally of the axis and generally perpendicular to the rear part, having a pair of

oppositely directed faces, and wholly out of contact with the sleeve, the web part being substantially only capable of flexing perpendicular to itself and parallel to the rear part;

a strain gauge on at least one face of the web part, whereby flexing of the web part varies the electrical characteristics of the strain gauge;

electronic circuitry connected to the strain gauge for forming an output corresponding to the flexing of the web part; and

means for displaying the output.

4,641,539

SENSOR RESPONDING TO THE ACTION OF A FORCE

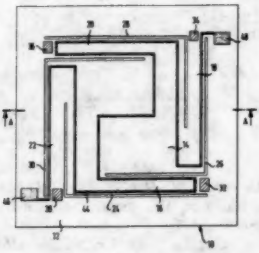
Vaclav F. Vilimek, Viecht, Fed. Rep. of Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 5, 1985, Ser. No. 752,277

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429250

Int. Cl.⁴ G01L *1/22, 1/26*

U.S. Cl. 73—862.67 **6 Claims**



1. A sensor responding to the action of a force, comprising:

a base body,

a force takeup element,

at least one support element which deforms under the influence of a force acting on the force takeup element, connecting the force takeup element and the base body,

a measuring member which reacts to the deformation with a change of a physical parameter, disposed in the deformation region between said at least one support element and the force takeup element,

an uninterrupted conductor path extending from a first terminal land on the base body via each support element and the force takeup element to a second terminal land on the base body,

and an evaluation circuit connected to the measuring member, including a current passage test circuit connected to the terminal lands on the base body which on detection of an interruption of the current passage through the conductor path renders the evaluation circuit inoperative.

4,641,540

BULK MATERIAL SAMPLING APPARATUS

Jack J. Ellis, 2453 Indian Tree Run, Glencoe, Mo. 63038

Filed May 1, 1985, Ser. No. 729,523

Int. Cl.⁴ G01N *1/20*

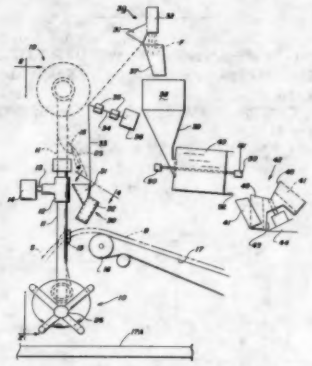
U.S. Cl. 73—863.53 **15 Claims**

9. Bulk material sampling apparatus for collecting a sample of the bulk material from a free falling stream, the apparatus comprising:

(a) conveyor means in a first elevation for moving bulk material in a primary flow direction having a free falling stream therein;

(b) sample cutter means rotatable in a closed path about an axis above the first elevation of said conveyor means and aligned for cutting transversely through said free falling stream;

(c) bucket means carried by said sample cutter means for receiving a sample of bulk material cut from the free falling stream by said cutter, said bucket being movable with said sample cutter means about said cutter axis to a second elevation above said primary flow stream for discharging the sample in a second free falling stream; and



(d) means operably mounted in a position for cutting a sample of bulk material from said second free falling stream at said second elevation, said operably mounted means being positioned above said primary flow stream such that bulk material missed by said sample cutting means returns to said primary flow by gravity in a free fall.

4,641,541

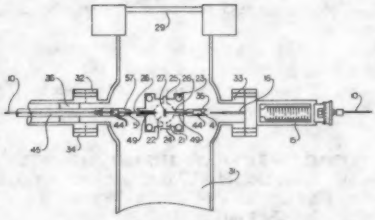
INTERNAL MASS SPECTROMETER INTERFACE TO A GAS CHROMATOGRAPH

Daryl Sharp, 317 Woodhaven, Chapel Hill, N.C. 27514

Filed Feb. 11, 1986, Ser. No. 828,178

Int. Cl.⁴ G01N *30/72*

U.S. Cl. 73—864.81 **20 Claims**



1. A gas chromatograph/mass spectrometer interface system for connecting a gas chromatograph output means to a mass spectrometer source, which comprises:

(a) an output column having a first end and a second end;

(b) an elongated rigid interface body having a first interface end and a second interface end, and having an interface gap positioned between the first interface end and the second interface end, said first interface end having a first bore extending therethrough to the interface gap for insertion of the gas chromatograph output means, said second interface end having a second bore extending therethrough to the interface gap for insertion of the output column, the output column being positioned such that its second end is located within the second bore, and said first

bore and said second bore being axially aligned across the interface gap;

(c) a means for moving the gas chromatograph output means through the first bore, across the interface gap and into the second bore;

(d) a means for securing the interface to a mass spectrometer such that the first end of the output column is positioned in the mass spectrometer source; and

(e) a vacuum means connected to the mass spectrometer source.

4,641,542

SWING MECHANISM FOR WINDER NOZZLES

Masato Kamei, Tokyo, Japan, assignor to Kamei Machine Co., Ltd., Tokyo, Japan

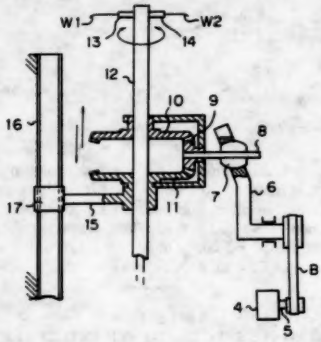
PCT No. PCT/JP84/00359, § 371 Date May 31, 1985, § 102(e) Date May 31, 1985

PCT Filed Jul. 11, 1984, Ser. No. 744,557

Claims priority, application Japan, Apr. 9, 1984, 59-69068

Int. Cl.[4] F16H *37/16*

U.S. Cl. 74—23 **1 Claim**



1. A swing mechanism for winder nozzles on a stator winder having bipolar field cores comprising

a bevel gear secured to a prime shaft coupled to a crank by means of a universal joint,

facing bevel gears arranged in meshing engagement with said secured bevel gear,

a tube coupled to one of said facing bevel gears and provided with nozzles,

a rotation stopper coupled sideways to the other of said facing bevel gears and having a slider, and

a guide rail for said slider arranged side-by-side with said tube.

4,641,543

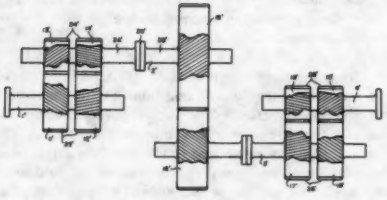
INTERMEDIATE SHAFT THRUST BALANCE

Thurman W. Jessup, 130 Jeanine Way, Anaheim, Calif. 92806

Filed Oct. 12, 1984, Ser. No. 660,114

Int. Cl.[4] F16H *57/00, 1/06, 1/20*

U.S. Cl. 74—410 **4 Claims**



1. Gearing system comprising:

a first shaft having a double helical gear set comprising a first gear and a second gear, the helix angles of said first and second gears being opposite and unequal;

a second shaft having: (1) a double helical gear set comprising a third gear meshing with said first gear, and a fourth gear meshing with said second gear; and (2) a single helical fifth gear;

said third and fourth gears being of opposite and unequal helix angles and having substantially equal face widths, thereby resulting in substantially equal tangential face loading;

a third shaft having a single helical sixth gear meshing with said fifth gear;

said second shaft constituting an intermediate shaft between said first and third shafts;

the inequality between the helix angles of said third and fourth gears, when the gears are substantially equally loaded, producing a first axial thrust on said second shaft;

the helix angle of said fifth gear producing a second axial thrust on said second shaft opposite and substantially equal to said first axial thrust;

the meshing of said double helical gear sets substantially locking said second shaft against axial motion relative to said first shaft;

the substantial equalizing of said axial thrusts obviating the need for thrust bearings on said second shaft.

4,641,544

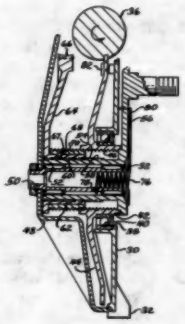
MOTION TRANSMITTING AND TIMING MECHANISM

David E. Russ, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 15, 1985, Ser. No. 787,316

Int. Cl.[4] F16H *55/02*

U.S. Cl. 74—435 **10 Claims**



1. A motion transmitting and timing mechanism comprising;

an input gear;

a timing gear rotatable about an axis and meshed with said input gear;

an output gear rotatable about said axis and shiftable along said axis into position in and out of a plane including said input gear, said output gear having a toothed sector;

means normally maintaining said toothed sector out of axial alignment with said input gear;

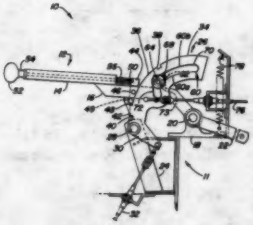
means responsive to rotation of said timing gear for axially moving said output gear between said positions; and

means operated by said timing gear and engageable with said output gear when said output gear is in said plane for moving said toothed sector into mesh with said input gear.

4,641,545
SINGLE LEVER CONTROL ARRANGEMENT

Bernd Rabe, Dellfeld, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Apr. 19, 1985, Ser. No. 725,182
Claims priority, application European Pat. Off., May 5, 1984, 84105076.8
Int. Cl.[4] G05G 9/08
U.S. Cl. 74—476 6 Claims



1. A control arrangment for controlling at least two devices carried by the same machine, each device being engageable responsive to an actuator, comprising:

a frame carried by the machine;

a primary control lever connected to the actuator of the first device and carried by the frame for rocking motion about a first pivot axis between first and second positions corresponding respectively to engagement and disengagement of the first device;

a secondary control lever connected to the actuator of the second device and carried by the frame for rocking motion about a second pivot axis between first and second positions corresponding to respective engagement and disengagement of the second device, said second pivot axis being approximately parallel to and spaced from and in fixed relation to the first pivot axis;

a camming arrangement including a first camming element carried by the primary lever and a second camming element carried by the secondary lever, one of said elements including camming surfaces and the other of said elements including a cam follower engageable by the camming surfaces, said camming surfaces including a first range defining a circular arc concentric with the first pivot axis when engaged by the cam follower and a second range contigous with the first but diverging from the circular arc of the first range so that as the primary lever is moved within the first range, the first device is engaged while the secondary lever remains stationary and as the primary lever is moved in the second range, the secondary lever is displaced by the camming surface so that the second device is engaged; and

means for arresting movement of the primary lever so as to impede its movement through a position corresponding to the junction between the first and second ranges.

4,641,546
CRANKSHAFT ASSEMBLY FOR SMALL GASOLINE MOTORS

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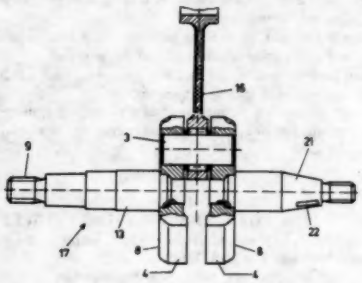
Filed Dec. 3, 1984, Ser. No. 677,294
Int. Cl.[4] F16C 3/10
U.S. Cl. 74—598 7 Claims

1. Crankshaft, such as used in small gasoline motors for lawn mowers, chain saws, two-wheeled vehicles, motor-driven hand-tools and the like, comprising at least one shaft pin, at least one crank web and at least one crank bolt, each said shaft pin, crank web and crank bolt being formed as a separate member, said web is provided with axially extending openings therethrough, said shaft pin is inserted into one of said openings and said crank pin into the other said opening and said pins are integrally interconnected with said web, said crank web is formed of one of a stamped strip metal and a forged sintered part, said shaft pin and crankpin are shaped from cylindrical blanks in an extrusion operation, said shaft pin and crankpin are weldably connected to said crank web, wherein the improvement comprises that said web has an outer face and an inner face, said openings in said web comprise a first opening for said at least one shaft pin and a second opening for said crankpin with said first opening having a first axially extending section extending from said inner face toward said outer face and a second axially extending section coaxial with said first axially extending section and extending from the end of said first axially extending section spaced from said inner face to said outer face, said first axially extending section having a smaller diameter than said second axially extending section, the end of said second axially extending section adjacent said first axially extending section forms a first annular shoulder extending substantially perpendicularly to the axis of the opening and facing toward said outer face, a first end of said shaft pin has a first axially extending section extending from the first end thereof toward a second end and a second axially extending section coaxial with and extending from said first axially extending section toward the second end of said shaft pin, said shaft pin having a radially outwardly extending second shoulder at the end of said second axially extending section thereof spaced from said first axially extending section, said second shoulder extending substantially perpendicularly of said shaft



pin axis and radially outwardly from said second axially extending section of said shaft pin, said first axially extending section of said shaft pin having a diameter corresponding to the diameter of the first axially extending section of said first opening and said second axially extending section of said shaft pin having a diameter corresponding to the diameter of said second axially extending section of said first opening so that said shaft pin fits in sliding engagement within the first opening in said web, said shaft pin has an axially extending conically tapered shoulder between the adjacent ends of said first and second axially extending sections of said shaft pin whereby said shaft pin is insertable into the first opening until the smaller diameter end of said conically tapered shoulder contacts in circular line contact the radially inner edge of said first shoulder in said first opening and thereby defining a triangular space therebetween, said shaft pin is forcibly axially displaceable relative to said first opening until said second axially extending section of said shaft pin is in complete contact with said second axially extending section of said first opening for the axial length thereof to said second shoulder at the end of said second axially extending section of said shaft pin spaced from said first axially extending section thereof, and at the same time permitting the tapered shoulder to be deformed into said triangular space and in abutting contact with said first shoulder so that when said wed and said first and second diameter sections of said shaftpin is heated, a weld connection is defined at the area of the deformation of said tapered shoulder.

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AUTOMATIC TRANSMISSION ADAPTER KIT

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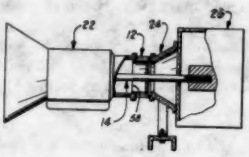
Filed Aug. 29, 1983, Ser. No. 527,273
Int. Cl.[4] F16H *57/02*
U.S. Cl. 74—606 R **29 Claims**



1. In a four-wheel-drive vehicle apparatus having a power train including an automatic transmission and a transfer case, an automatic transmission adapter kit for installation of a replacement automatic transmission of shorter length than an original automatic transmission in said four-wheel-drive vehicle, comprising:

an extension housing interposed between said replacement automatic transmission and said transfer case;

an output shaft, having a first end which engages said replacement automatic transmission and a second end which engages said transfer case;

first sealing means for sealing between said extension housing and said replacement automatic transmission;

second sealing means for sealing between said extension housing and said transfer case; and

fastening means for connecting said extension housing between said replacement automatic transmission and said transfer case.

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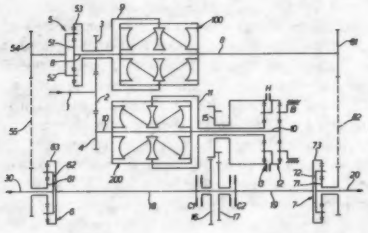
DRIVE LINE FOR A TRACK-LAYING VEHICLE

C. J. Greenwood, Leyland, United Kingdom, assignor to Leyland Vehicles Limited, Leyland, England

Filed Aug. 27, 1984, Ser. No. 644,804
Claims priority, application United Kingdom, Aug. 25, 1983, 8322937
Int. Cl.[4] F16H *37/10*; B62D *11/16*
U.S. Cl. 74—691 **8 Claims**



1. A drive line for a track-laying vehicle having speed shaft steering, comprising two track drive shafts and a drive transmission whose output drives a shaft coupled to both track drive shafts by way of epicyclic gears having further inputs for steering, whereby the said shaft normally rotates while the vehicle is stationary, characterised in that the drive transmission has a continuously-variable ratio, and in that the drive transmission drives the shaft by way of a transfer system operable in at least low regime I and low regime II modes, the transfer system having a summing epicyclic gear arranged to sum the input and the output of the drive transmission and to provide a summed output, and coupling means for coupling the said summed output to the said shaft in either rotational sense to select either low regime I or low regime II, the changeover between low regime I and low regime II occurring synchronously, with the said shaft being stationary at the changeover point, low regime I being operable for vehicle velocities from rest to a first predetermined velocity, and low regime II being operable from the first to a second, higher, predetermined velocity.

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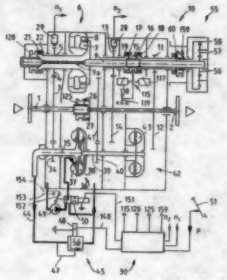
MULTIPLE STAGE GEARBOX SHIFTABLE UNDER LOAD

Helmut Muller, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Apr. 22, 1985, Ser. No. 725,417
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1984, 3415909
Int. Cl.[4] F16H *47/00*
U.S. Cl. 74—732 **13 Claims**



1. A change spur gear assembly for a vehicle transmission which has a transmission input shaft and individual gear stages shiftable by detent clutches having sliding sleeves and deflective detents comprising:

a starting member having a fillable and emptiable hydrodynamic circuit whose primary wheel is connected with a first layshaft and whose secondary wheel is connected with a layshaft of the change gear;

a synchronizing device which is effective for all gears and arranged on a second layshaft for bringing the detent clutch halves to equal speed for shifting, said synchronizing device including a hydrodynamic servoclutch with variable charge and having a primary vane wheel arranged on the second layshaft and having a secondary vane wheel on an intermediate shaft and connected through a gear unit with the transmission output shaft;

the gearing of the secondary vane wheel of the servoclutch to the transmission output shaft is so selected that the clutch can at force of flow effectuate, through the second layshaft and intermediate shaft, an output speed which is between 5 and 15 percent higher than maximum speed;

control means which effectuates synchronism of the detent clutches participating in the shifting through which an automatic gear change is triggered in accordance with a change signal formed from momentary values of the input variables of engine capacity, transmission input speed, and transmission output speed, which changeover takes place with the following steps: filling the hydrodynamic servoclutch, disengaging the shift detent which is engaged with the present gear, adjusting the slip of the hydrodynamic servoclutch to a set value coordinated with the gear to be shifted next for the ratio of output speed to the input speed of the transmission, engaging the shift detent coordinated

with the new gear, and emptying the hydrodynamic servoclutch.

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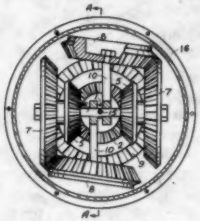
AUTOMATIC TRANSMISSION UTILIZING GYROSCOPIC SATELLITE GEARS

Usher Meyman, 230 Ocean Pkwy., Brooklyn, N.Y. 11218

Filed Apr. 29, 1985, Ser. No. 728,500

Int. Cl.[4] F16H *3/74*

U.S. Cl. 74—751 **4 Claims**



1. An automatic transmission, comprising

a driving shaft and a driven shaft defining an axis of the transmission and rotating about said axis;

a first gear drive including central gears mounted on said shafts, and satellite gears engaging with said central gears;

a second gyroscopic gear drive including central gears, a carrier, and gyroscopic satellite gears engaging with said central gears of said second gear drive and mounted on said carrier;

elements connecting said gear drives with one another and transmitting gyroscopic moments from said second gear drive to said first gear drive; and

a reactor engaging with said central gears of said second gyroscopic gear drive.

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APPARATUS FOR TRANSLATING ROTATIONAL MOTION AND TORQUE

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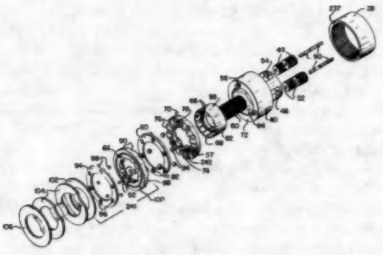
Filed Dec. 27, 1983, Ser. No. 565,414

Int. Cl.[4] F16H *57/10, 5/52*; B23B *47/14*

U.S. Cl. 74—785 **2 Claims**



1. Apparatus for transmitting rotational motion and torque from a rotating input shaft to an output shaft comprising:

a geared drive member coupled by a gear assembly to the input shaft, rotation of the input shaft causing rotation of the geared drive member through said gear assembly, said geared drive member defining a recess adapted to receive an engaging member;

a drive plate so coupled to the input shaft that rotation of the input shaft causes corresponding rotation of said drive plate, said drive plate defining a recess for receiving said engaging member;

a coupling member so coupled to the output shaft that rotation of said coupling member causes corresponding rotation of the output shaft, said engaging member being mounted to said coupling member;

said coupling member, said geared drive member and said drive plate being mounted for relative movement between (i) said geared drive member and said drive plate and (ii) said coupling member, receipt of said engaging member by a said recess being achieved by said relative movement;

said drive plate or said geared drive member being capable of transmitting rotational motion and torque to said coupling member when said recess of said drive plate or said geared drive member receives said engaging member; and

means for causing said relative movement between said coupling member, said drive plate and said geared drive member.

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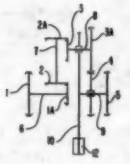
RINGGEARLESS TWIN SUN PLANETARY POWER AMPLIFIER

Eugene Kurywczak, 238 Murray St., Elizabeth, N.J. 07202

Continuation-in-part of Ser. No. 257,323, Apr. 22, 1981, abandoned. This application Jan. 22, 1985, Ser. No. 581,620

Int. Cl.[4] F16H *1/28, 3/44*

U.S. Cl. 74—802 **3 Claims**



1. A ringgearless twin sun planetary power amplifier comprising a planetary gear arrangement in a housing and means within to mount: a centrally positioned braked reaction sun gear, concentric to the said reaction sun gear with a rigidly affixed driving gear, a rotatable input axle, extending outside the said housing providing means for driving connection with a power source, opposite and concentric to the said input axle, a carrier with a rigidly affixed carrier shaft, passing through and journaled from the said reaction sun gear and housing providing means of connection with a load, on the said carrier providing means parallel to the axis of rotation of the said carrier with a rigidly affixed driven and driving planet gear in a location where the said driving planet gear meshes with the said reaction sun gear, a rotatable planet axle, instituting the driving connection with the said carrier, a rotatable idler axle with a ridigly affixed driven idler gear meshing with the driving gear on the said input axle and a rigidly affixed driving idler gear meshing with the driven gear on the said planet axle is mounted on the said carrier providing means in a position that institutes the said meshing of gears thereof, and all the said meshed gears constitute a gear train, which reduces the angular speed of the said carrier in respect to the input speed as determined by a speed reduction ratio factor, that is a sum of one revolution of the said carrier plus the product of ratios between the number of teeth of the meshing pairs of gears, defining the centers as the axes of their rotations.

4,641,553

CONTROL SYSTEM AND METHOD FOR A POWER DELIVERY SYSTEM HAVING A CONTINUOUSLY VARIABLE RATIO TRANSMISSION

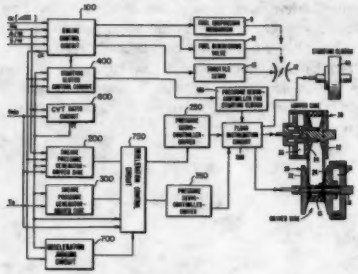
Hideyuki Kobayashi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 3, 1985, Ser. No. 771,842

Claims priority, application Japan, Sep. 13, 1984, 59-190667

Int. Cl.[4] B60K *41/12, 41/18*

U.S. Cl. 74—866 **3 Claims**



1. A CVT control method comprising the steps of:

delivering a signal indicative of a reference transmission gear ratio to a driver means of a stepless variable speed gear according to signals produced by detecting running conditions of a vehicle to which the method is applied;

judging the vehicle to decelerate, according to both a signal produced in response to the accelerator pedal of the vehicle and a signal indicative of the transmission gear ratio of the vehicle; and

modifying the signal indicative of the reference transmission gear ratio so as to conform to the transmission gear ratio determined by the speed of the vehicle, according to both a signal produced by the judgment made as described above and a signal indicative of the speed of the vehicle.

4,641,554

WRENCH FOR EFFECTING SCREW CONNECTIONS OF INACCESSIBLE PARTS OF MOTOR VEHICLES

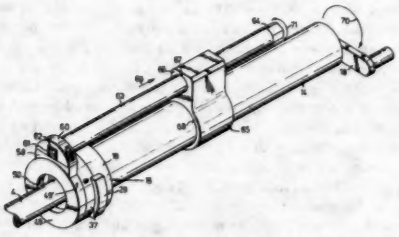
Horst Klann, Terra-Wohnpark 12, D-7730 Villingen-Schwenningen, BRD, Fed. Rep. of Germany

Filed Jan. 10, 1985, Ser. No. 690,164

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1984, 8400871[U]

Int. Cl.[4] B25B *13/48*

U.S. Cl. 81—55 **9 Claims**



1. A wrench for an inaccessible screw connection of a motor vehicle, the screw connection having a first part (**6**) with a large diameter cylindrical portion (**13**) a threaded portion (**3**), an axially extending portion (**8**) connected to said large diameter portion, a radially extending stop surface (**23**), a pair of diametrically opposed parallel wrench flats (**11,12**) on an end of the large diameter portion which is opposite from the axially extending portion, the screw connection also having a second part (**4**) with a threaded portion (**2**) screwed to the threaded portion (**3**) of the first part (**6**), and a pair of diametrically opposed parallel wrench flats (**9,10**), said wrench comprising:

a hollow tube (**14**) having one end with a wrench profile (**16**) for use in rotating said tube, and an opposite end with a radial stop part (**22,88**) for engagement with the stop surface of the screw connection, said tube having a length between its ends which is at least as long as a length of the axially extending portion (**8**) of the screw connection so that when said stop part of said tube is engaged with the stop surface of the screw connection, said tube extends over the axially extending portion of the screw connection to bring said opposite end of said tube into the vicinity of the large diameter portion of the screw connection;

a ring-shaped wrench head (**15,73**) connected to said opposite end of said tube, said wrench head being fixed to said tube at least against relative axial movement between said tube and said wrench head, said wrench head having a cylindrical opening (**20,80**) of a diameter at least as large as the diameter of the large diameter portion (**13**) of the screw connection so that when said tube is moved axially over the axially extending portion of the screw connection, said cylindrical opening of said wrench head moves axially over the large diameter portion of the screw connection;

first wrench means (**29,91**) having opposite jaws (**30,96**), said first wrench means being operatively connected to said wrench head for radial movement of said opposite jaws into engagement with the wrench flat (**11,12**) of the first part (**6**) of the screw connection when the large diameter portion of the screw connection is in said cylindrical opening of said wrench head;

a ring part (**49**) mounted for rotation to said wrench head, axial holding means (**46,47**) being engaged between said wrench head and said ring part for holding said ring part at a fixed axial position on said wrench head, said ring part having an inner recess (**51**) which is sufficiently large for the passage of the large diameter portion (**13**) of the screw connection, said recess having opposite bearing surfaces (**54,55**) and said recess communicating with said cylindrical opening of said wrench head;

a fork wrench (**58,58'**) having a web forming a back portion and first and second fork legs interconnected with said web to form opposite jaws, said opposite jaws having facing parallel surfaces for engagement with the pair of wrench flats (**9,10**) of the second part (**4**) of the screw connection, said fork wrench having outside bearing surfaces engageable with said bearing surfaces of said recess (**51**) of said ring part (**59**) when said fork wrench (**58,58'**) is engaged in said recess of said ring part, said ring part having a radially extending opening therethrough extending from an exterior of said ring part into said recess thereof for receiving said fork wrench;

rod means (**59,63**) operatively connected to said fork wrench (**58,58'**) for rotationally holding said fork wrench when said fork wrench is in said recess and for thereby rotationally holding said ring part, with respect to said tube so that with said opposite jaws of said first wrench means engaged with the wrench flat of the first part of the screw connection, the first part of the screw connection can be rotated with respect to the second part of the screw connection; and

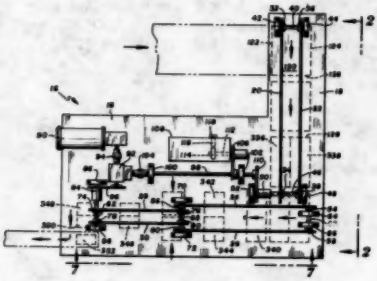
said opposite jaws of said first wrench means being spaced from each other when they are engaged with the wrench flats of the first part of the screw connection, by a distance smaller than the diameter of the large diameter portion of the screw connection.

4,641,555

PAPER HANDLING SYSTEM

Dewey A. Johnson, 599 Summit Ave., St. Paul, Minn. 55102; Gregory P. Hamlin, 1307 Portland Ave., St. Paul, Minn. 55104, and Gary W. Schukar, 3494 Rolling View Ct., White Bear Lake, Minn. 55110

Filed Jan. 31, 1986, Ser. No. 824,627
Int. Cl.[4] B26D *7/32*
U.S. Cl. 83—29 23 Claims



1. An apparatus for dividing sheets of material into pluralities of comparatively smaller sheet sections, and for collating the smaller sheet sections, including:

means forming a longitudinally directed first path, and a transversely directed second path beginning at a downstream end of the first path;

a first conveying means for moving a first stack longitudinally on said first path, each stack including at least one sheet of material with all sheets in the stack aligned in a predetermined orientation;

a first cutting means along said first path for cutting the first stack in the longitudinal direction to form two first stack portions;

said first conveying means further adapted for moving the first stack portions simultaneously and longitudinally on said first path from said first cutting means to a first collating station at the downstream end of the first path, thereby to elevate one of said first stack portions above the other first stack portion;

a first alignment means at the first collating station for vertically aligning said first stack portions, with the elevated first stack portion directly on top of the other first stack portion, to combine said stack portions into a single second stack, said first alignment means including a second conveying means for moving the second stack in the transverse direction on the second path;

a second cutting means along said second path for cutting the second stack in the transverse direction to form two second stack portions;

said second conveying means further adapted for moving the second stack portions simultaneously and transversely on the second path from the second cutting means to a second collating station, thereby to elevate one of the second stack portions above the other second stack portion; and

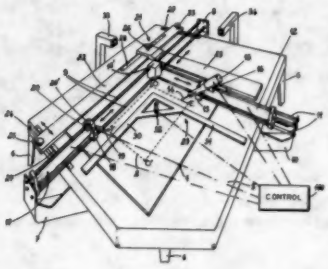
a second alignment means at the second collating station, including a pre-merging means for moving the elevated second stack portion toward the other second stack portion in the longitudinal direction to cause the elevated second portion to at least slightly overlap the other second stack portion, said second alignment means further including a merging means downstream of said pre-merging means for merging the second stack portions to form a single third stack of sheet sections.

4,641,556

METHOD OF AND APPARATUS FOR THE CUTTING OF WINDOWS IN MATS

Gerard G. Vigneron, 28, avenue Jean Jaures, Modane (Savoie), and Jean C. R. Brulé, Les Neyrolles (Ain), both of France

Filed Mar. 19, 1985, Ser. No. 713,424
Claims priority, application France, Mar. 22, 1984, 84 05113
Int. Cl.[4] B26F *1/38*; B26D *3/00, 5/12*
U.S. Cl. 83—36 9 Claims



1. A method of cutting rectangular windows in blanks to form mats for display purposes, comprising the steps of:

positioning a blank of sheet material on a support surface so that a vertex of a first potential corner of a window to be formed in said blank is positioned at a reference point on said surface for all sizes of mats corresponding to a junction of the path of two blades displaceable mutually perpendicular and upon rotation;

forming a pair of cuts with said blades respectively along two perpendicular lines fixed with respect to the surface in said blank adapted to form two adjoining sides of a rectangular window therein;

rotating said blank in its plane through 180° to position a point of said blank corresponding to a vertex of a diagonally opposite corner of said window at said reference point; and

forming two mutually perpendicular cuts in the blank with said blades whereby said cuts delimit a rectangular window in said blank to form said mat.

4,641,557

ELECTRONICALLY CONTROLLED POWER SAW

Robert E. Steiner, St. Louis County; Karmen D. Cox, St. Charles County; Daniel A. Terpstra; James J. Metzger, Jr., both of St. Louis County, and Steven H. Plume, St. Charles County, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 26, 1984, Ser. No. 685,918
Int. Cl.[4] B26D *5/30*
U.S. Cl. 83—71 54 Claims

1. A bench power saw comprising:

a table for supporting a workpiece;

means adapted for driving a saw blade or the like around its rotational axis to cut the workpice;

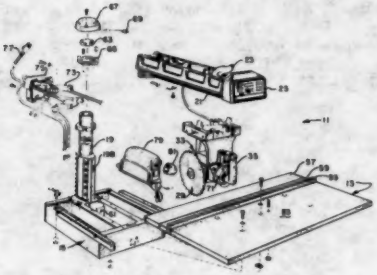
means for sensing the elevation of the rotational axis with respect to a reference elevation;

manually operable means for entering a desired final elevation of the rotational axis; and

means responsive to the entering of a desired final elevation of the rotational axis for moving said axis to said elevation, said moving means including a positioning motor which when energized changes the elevation of the rotational axis;

wherein the manually operable means further includes

means for requesting a continuing change in elevation, the moving means being responsive to said request to continue



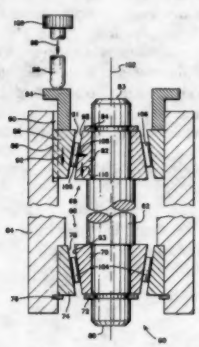
changing the elevation within preset limits until the request ceases or the preset limits are reached.

4,641,558

ROTATABLE SHAFT ASSEMBLY

Wolfgang Hoffmann, Modesto, Calif., assignor to B & H Manufacturing Company, Ceres, Calif.

Filed Aug. 16, 1985, Ser. No. 766,394
Int. Cl.[4] B26D *7/26*
U.S. Cl. 83—152 **8 Claims**



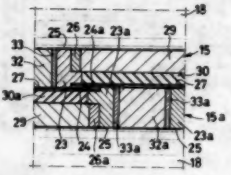
1. A precision centerable, rotatable shaft assembly, which comprises: a first shaft having a first end and a second end, a first housing extending generally axially along said shaft, said shaft being journalled in said housing by a first roller bearing assembly connected to said first shaft proximate to the first end of said first shaft, said first roller bearing assembly including a first inner race fixedly attached to said shaft, a first outer race fixedly attached to said first housing, and a plurality of rollers positioned between the first inner and outer races, the first outer race having an inner surface tapering toward said shaft approaching the first end of said shaft, a second roller bearing assembly connected to said first shaft proximate to the second end of said first shaft, said second roller bearing assembly including a second inner race fixedly attached to said shaft, a second outer race axially movable within said first housing toward said first roller bearing assembly, and a plurality of rollers positioned between the second inner and outer races, the second outer race having an inner surface tapering away from said shaft approaching said first roller bearing assembly, and adjustable means including a micrometer connected to supply force to a force applying member movable axially along said shaft toward the first shaft end urging the second outer race toward said first roller bearing assembly.

4,641,559

EQUIPMENT FOR SLITTING CONTINUOUS TAPES INTO STRIPS WITH SHAPED SIDE PROFILE, IN PARTICULAR FOR METAL SHEET

Giovanni P. Castiglioni, Castellanza, Italy, assignor to F.I.C.I. Finanziaria Industriale Commerciale Immobiliare S.p.A., Milan, Italy

Filed Jan. 7, 1986, Ser. No. 816,898
Claims priority, application Italy, Jan. 23, 1985, 19197 A/85
Int. Cl.[4] B23D *25/12*; B26D *1/62*
U.S. Cl. 83—333 **5 Claims**



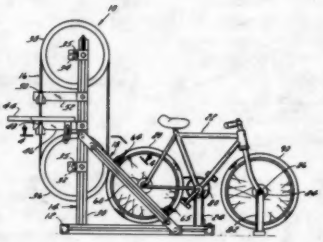
1. Equipment for the continuous slitting of tapes of material, in particular tapes of metal plate and the like, into longitudinal strips with shaped side profile, essentially of sinusoidal and/or mixed outline, of the type comprising a base onto which a stand is positioned, supporting a pair of slitting cylinders, means for driving the rotation of said cylinders and related motor means being provided, said slitting cylinders essentially having a set of blades with shaped peripheral cutting edges, said blades being positioned on said cylinders in superimposed and staggered fashion, such as to provide a conjugated coupling of the shears type, characterized in that said slitting cylinders support rigidly said set of blades positioned on shafts alternatively with said cutting edges facing and not facing to each other, said blades being formed as bells provided with central and axial bores, and such as to receive between an inner surface of them and the surface of the supporting shaft a spacer ring, between two blades facing to each other at least a couple of radially elastic means and between two blades not facing to each other at lest a spacer element.

4,641,560

PORTABLE SELF-POWERED BAND SAW

William Kolberg, 709 Lincoln Ave., Green Bay, Wis. 54303

Filed Dec. 9, 1985, Ser. No. 806,607
Int. Cl.[4] B23D *55/06*
U.S. Cl. 83—788 **7 Claims**



1. A portable saw assembly comprising a base, a frame assembly mounted on said base, a pair of wheels mounted on said frame in a common plane, a continuous band saw mounted on said wheels, a wheel guide assembly mounted on said base to

define a bicycle wheel support, a sprocket support member mounted on said base in a spaced relation to said guide assembly whereby a bicycle supported on said sprocket member with the rear wheel aligned in said guide assembly will bear on said saw blade wheel and can be used to drive the saw blade wheels.

4,641,561

DISC-SHAPED TOOL

Ernst Salje, Schulheide 4, Bendestorf, Fed. Rep. of Germany (D-2106), and Jorg Plester, Wendeburg, Fed. Rep. of Germany, assignors to Ernst Salje, Bendestorf, Fed. Rep. of Germany

Filed Feb. 13, 1986, Ser. No. 828,880

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1985, 3504826

Int. Cl.[4] B27B *33/08*

U.S. Cl. 83—835 **9 Claims**

1. A disc-shaped tool comprising a disc-like base, cutting means on the periphery of the tool, a vibration-reducing structure on at least one side of the base, the vibration-reducing structure comprising a layer of visco-elastic material and a covering on it, the base having a continuous groove in the said at least one side, the covering having an outer edge region extending into the groove, and at least one holding means elastically joining at least one of the rear and outer end surfaces of the covering to the base inside the groove.

4,641,562

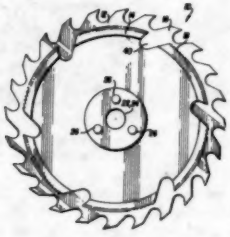
CUTTING TOOL FOR MAKING A SMOOTH SAW CUT

William Clarke, Bremen, Ga., assignor to Bremen Associates Incorporated, Bremen, Ga.

Filed Aug. 16, 1985, Ser. No. 766,287

Int. Cl.[4] B27B *33/02*

U.S. Cl. 83—837 **16 Claims**



1. A saw blade comprising:

a first saw blade having a plurality of teeth projecting radially from a periphery thereof;

a second saw blade having a plurality of teeth projecting radially from a periphery thereof, said second saw blade having a greater number of teeth than the first saw blade;

the first saw blade having a greater diameter and smaller thickness than the second saw blade, the teeth of the first saw blade being larger than the teeth of the second saw blade; and

means for coaxially mounting the first and second saw blades together.

4,641,563

ELECTRONIC MUSICAL INSTRUMENT

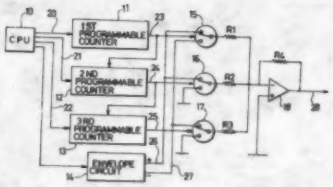
Yoichi Nagashima, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Jul. 29, 1985, Ser. No. 760,315

Claims priority, application Japan, Jul. 31, 1984, 59-162049

Int. Cl.[4] G10H *1/02, 1/057, 5/04*

U.S. Cl. 84—1.01 **3 Claims**



1. An electronic musical instrument which is provided with a first programmable counter for generating a reference clock signal corresponding to a musical frequency, and a plurality of cascade-connected programmable counters which are each triggered by the preceding programmable counter, whereby a primary waveform is generated as a multilevel signal which takes one of a plurality of levels for each period specified by one of the cascade-connected programmable counters, a first programmable counter for generating a reference clock signal corresponding to the musical frequency, a second programmable counter which is triggered by the first programmable counter, a third programmable counter which is triggered by the second programmable counter and a fourth programmable counter which is triggered by the third programmable counter, whereby the primary waveform is generated as a ternary signal which takes a first level for a period specified by the second programmable counter, a second level for a period specified by the fourth programmable counter and a third level for a period specified by the third programmable counter and for the remaining period.

4,641,564

MUSICAL TONE PRODUCING DEVICE OF WAVEFORM MEMORY READOUT TYPE

Shimaji Okamoto, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 15, 1984, Ser. No. 621,246

Claims priority, application Japan, Jun. 17, 1983, 58-109945; Mar. 3, 1984, 59-40720

Int. Cl.[4] G10H *1/06*

U.S. Cl. 84—1.22 **19 Claims**

1. A musical tone producing device of a waveform readout type, comprising:

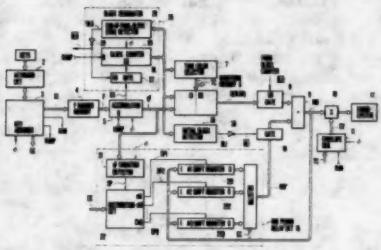
reference waveform memory means for storing reference waveform data constituting a reference waveform, said reference waveform being similar to each of divided waveforms belonging to a plurality of blocks into which a musical tone waveform of a musical tone to be produced is divided;

difference waveform memory means for storing difference waveform data which comprises a plurality of block difference waveform data, each of said block difference waveform data constituting difference waveform representing a difference between said reference waveform and each of said divided waveforms;

readout means connected to said reference waveform memory means and said difference waveform memory means for reading out said reference waveform data and for reading out successively said block difference waveform data;

adding means connected to said reference waveform memory means and said difference waveform memory means for adding said reference waveform data and each of said block difference waveform data and for outputting successively added results respectively corresponding to said divided waveforms; and

sound means connected to said adding means for producing said musical tone according to said added results.



4,641,565

UPRIGHT PIANO

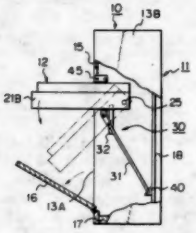
Hiroki Tachida; Takane Sato, and Shigeaki Sato, all of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 30, 1985, Ser. No. 728,781

Claims priority, application Japan, May 1, 1984, 59-062985; Dec. 21, 1984, 59-192859

Int. Cl.[4] G10C *3/12*

U.S. Cl. 84—431 9 Claims



1. An improved upright piano, comprising: a substantially box-type main casing,

a plate arranged substantially vertically along the rear side of said main body,

a keyboard unit pivoted at its rear end to said main casing in a vertically turnable arrangement, and

a holder unit including elongated stays, each of which is pivoted, at one end, to the bottom of said keyboard unit in a vertically turntable arrangement and detachably engaged, at the other end, in a seat mounted on the lower portion of said plate,

whereby said keyboard unit is held substantially horizontally when said stay is engaged in said seat, said keyboard, said stay and said seat thereby coupled in a triangular support arrangement, and

whereby said keyboard unit is fully accommodated in a lower space in said main casing when said stay is disengaged from said seat.

4,641,566

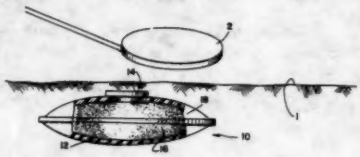
METHOD FOR DETECTING BURIED LAND MINES BY NON-DESTRUCTIVE MEANS

Robert L. Pomeroy, 29 Clarence Street, Dartmouth, Devon, England

Filed Jun. 22, 1983, Ser. No. 506,770

Int. Cl.[4] F42D *5/02*; G01V *3/11*; G21H *5/02*

U.S. Cl. 89—1.13 12 Claims



8. A method of detecting non-metallic buried mines comprising,

depositing material on a suspected mine field,

allowing the material to disperse into the ground,

detecting differential levels of material in the ground, and

locating suspected mines according to detected differential levels of material, wherein the depositing comprises spraying a liquid solution containing metal ions over the suspected mine field, said solution providing a leach that concentrates on or about buried mines, said leach being detectable by detector means capable of distinguishing between greater and lesser concentrations of metal ions.

4,641,567

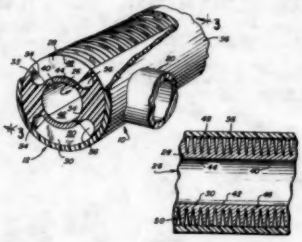
BARREL ASSEMBLY FOR ELECTROMAGNETIC RAIL GUN

Richard L. Creedon, San Diego, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed May 31, 1983, Ser. No. 499,206

Int. Cl.[4] F41F *1/02*

U.S. Cl. 89—8 3 Claims



1. A rail gun barrel assembly defining an elongated bore, said barrel assembly comprising:

a pair of elongated, generally parallel conductive rails extending along opposite sides of the bore and being symmetrical about the longitudinal axis defined by the bore;

a pair of elongated insulating members disposed generally coextensively with said rails, said insulating members having passages formed in them for carrying coolant fluid;

an elongated, generally cylindrical outer shell disposed substantially coaxially of the bore for radially constraining said rails and insulating members, said outer shell having ports formed through it to enable coolant to pass therethrough;

coolant supply means for supplying coolant fluid through

some of said ports into said passages in said insulating members; and

coolant drain means for draining coolant from said passages of said insulating members through others of said ports;

each of said rails comprising a longitudinally extending inner portion for carrying current and a plurality of transverse fins extending radially outward from said inner portion to said shell to react bursting forces generated in said bore;

each of said fins being tapered in thickness so as to be of approximately constant longitudinal circular sectional area at each radius throughout;

whereby radial compressive stresses in each of said fins due to bursting forces generated in said bore are substantially equalized over the radial dimension of each of said fins due to the approximately constant longitudinal circular sectional area at each radius of each of said fins.

4,641,568

VACUUM-OPERATED BRAKE POWER BOOSTER

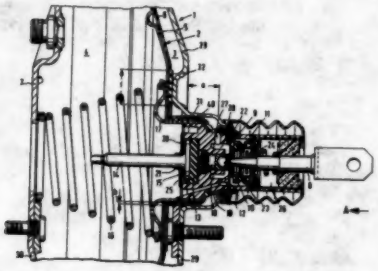
Peter Boehm, Frankfurt am Main; Peter Volz, Darmstadt; Gilbert Bischoff, Hattersheim; Sigmund Booten, Oberursel; Klaus Engert, Buerstadt, and Albin Loew, Karben, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 12, 1985, Ser. No. 710,926

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3411027

Int. Cl.⁴ F15B *9/10*

U.S. Cl. 91—369 A **9 Claims**



1. A vacuum-operated brake power booster with a movable wall sealed off relative to the vacuum housing and with a piston rod coupled with a brake pedal and serving to actuate a control valve by means of which a power chamber of the brake power booster is connectible at option either to vacuum or to a more elevated differential pressure, said control valve being furnished with a control valve piston adapted to slide axially within a control valve body, said control valve piston acting on the end of a push-rod sliding the piston of the master cylinder, a reaction element interposed between said control valve piston and said push-rod, and an air deflector element in the annular clearance formed between a peripheral surface of said control valve body and a neck portion of said vacuum housing to affect the flow of air in said annular clearance, said air deflector element retained to said control valve body in a manner such that said air deflector element moves jointly with said movable wall in the longitudinal direction of the vacuum-operated brake power booster.

4,641,569

CALENDER SELF-LOCKING LOADING MECHANISM

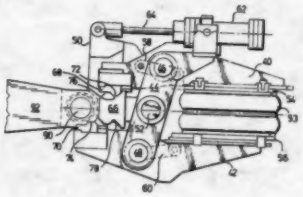
Rodney M. Smith, and Jiri Masek, both of Montreal, Canada, assignors to Valmet-Dominion Inc., Lachine, Canada

Filed Apr. 5, 1985, Ser. No. 720,244

Claims priority, application Canada, Apr. 12, 1984, 451888

Int. Cl.⁴ F01B *19/00*; B30B *3/04*

U.S. Cl. 92—43 **3 Claims**



1. Pressure actuator selectively operative to provide force output in a selected one of two substantially opposite directions comprising a frame, a first and second arms, a link means pivotably connected at each of its opposite ends to one of said arms, means pivotably mounting said link means to said frame at a point substantially midway between the pivotal connections of said link with said arms, a pair of opposed pressure pads mounted one on each of said arms on one side of said link and an extensible actuator interposed between said arms on the opposite side of said link to said pressure pads, each of said pressure pads being formed with a locking means, a locking bar interposed between said arms on said one side of said link in a position to be engaged by each of said pressure pads when its respective arm is in a reactive position, cooperating locking means on said locking bar to cooperate with said locking means on said pressure pads when said pressure pads are in reactive position, means for moving said arms by pivoting of said link about its pivotal mounting on said frame thereby to move said arms between a position wherein the first arm is in a reactive position and said second arm is in an active position and a second position wherein said first arm is in an active position and the second arm is in a reactive position, said locking means on each of said pads engaging with its said cooperating locking means on said locking bar when its respective arm is, so that forces applied by said pad in reactive position against its cooperating locking means lock said arm in said reactive position in said reactive position and operating on said locking bar to prevent movement of the said arm in said reactive position, said pivotal connection between said link and said arm in said active position permitting said arm in said active position to pivot and thereby apply a pressure via its pressure pad against a load when said extensible actuator is actuated.

4,641,570

SWASH PLATE TYPE COMPRESSOR HAVING A CENTER CAVITY IN SURFACE OF PISTON SHOE

Kenichiro Futamura; Keiichiro Ohtsu, both of Toyota; Tatsuhiko Fukuoka, Aichi; Kenji Takenaka; Yoshio Itakura, both of Kariya, and Hiroshi Koga, Chiryu, all of Japan, assignors to Taiho Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, both of, Japan

Continuation of Ser. No. 630,587, Jul. 10, 1984, abandoned. This application Apr. 29, 1986, Ser. No. 858,580

Claims priority, application Japan, Jul. 20, 1983, 58-132106

Int. Cl.⁴ F01B *3/00*; F04B *1/18*

U.S. Cl. 92—71 **5 Claims**

1. A swash plate type compressor comprising

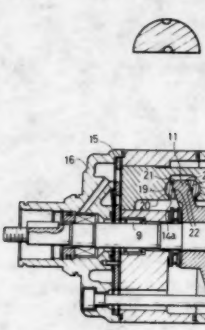
a cylinder block which has at least one cylinder bore which extends parallel to a rotatable shaft;

a swash plate rotated by said rotatable shaft within said

cylinder block and having a sliding surface transverse to said rotatable shaft;

a piston attached movably within said cylinder bore; and

a shoe which intervenes between said piston and said swash plate and reciprocates said piston by rotation of said swash plate,



wherein said shoe has a substantially non-deformable surface which contacts said sliding surface of said swash plate, said substantially non-deformable surface being provided with a cavity which forms an opening to said shoe and which terminates within said shoe, the area of said opening being from 0.3% to 20% of the area of said surface of said shoe.

4,641,571

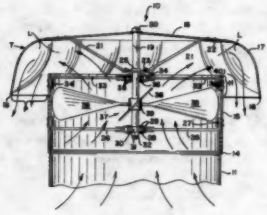
TURBO FAN VENT

William J. Anderson; Wayne R. Anderson, and Larry D. Robinson, all of Taylorsville, Miss., assignors to Enamel Products & Plating Co., McKeesport, Pa.

Filed Jul. 15, 1985, Ser. No. 754,907

Int. Cl.[4] F23L *17/10*

U.S. Cl. 98—72 **12 Claims**



1. A turbo fan vent capable of being rotated by wind currents comprising:

a turbine having a solid upper wall and side wall, said side wall having a plurality of closed louvers therearound, said side wall having a height substantially less than its diameter;

a rotary shaft removably fastened at a top end thereof to the upper wall of the turbine by releasable lock means associating thereat;

a plurality of braces extending from connections to the upper wall of the turbine and terminating at a bracket means, the bracket means being arranged along the rotary shaft below said releasable lock means and having an opening therethrough slidably receiving said rotary shaft therein, whereby upon unlocking said releasable lock means, the turbine, braces and bracket means are slidably removable from the rotary shaft;

collar means vertically overlapping a portion of said side wall and having a diameter substantially less than said turbine side wall, said collar means supporting interiorly thereof upper and lower bearing means supportably and rotatably holding said rotary shaft;

said upper bearing means journalling said rotary shaft below said bracket means and being supported by a plurality of radial collar braces extending from connections to the collar means;

said lower bearing means being a thrust-type bearing assembly arranged generally at the lower end of the rotary shaft, and being supported by a plurality of radial cross braces extending from connections to the collar means;

a fan assembly having a plurality of fan blades arranged within said collar and said fan blades each being centrally affixed to hub means secured to said rotary shaft at a location therealong between said upper and lower bearing means, whereby upon the rotation of said turbine, said fan assembly spins in response thereto whereby to create an upward ventilating draft towards said turbine and outwardly therefrom in a passageway defined between said turbine side wall and collar.

4,641,572

MACHINE WITH A CENTRIFUGAL DRUM

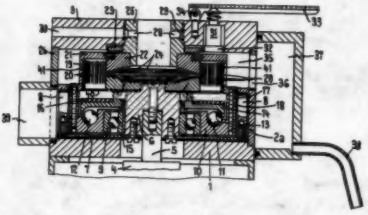
Franz Varga, Murten, Switzerland, assignor to Rotorcafe AG, Switzerland

Filed Jan. 18, 1985, Ser. No. 692,580

Claims priority, application Switzerland, Feb. 10, 1984, 651/84

Int. Cl.[4] A47J *31/22, 31/42*

U.S. Cl. 99—286 **20 Claims**



1. An apparatus for centrifuging liquid from a wet material, comprising:

a centrifugal drum having a removable cover mounted along a front side thereof;

stripper means adjacent said centrifugal drum for removing residue from the centrifuged material within said centrifugal drum;

drive means for rotatably driving said centrifugal drum and said stripper means at substantially the same number of revolutions per minute for centrifuging the liquid from the material; and

braking means for reducing the rate of rotation of said centrifugal drum relative to that of said stripper means for providing axial extraction of said residue from the centrifugal drum when said cover is removed therefrom.

4,641,573

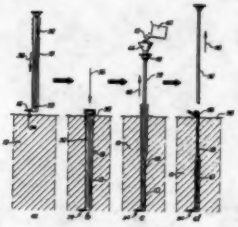
APPARATUS FOR FUMIGATING BULK-STORED COMMODITIES

Lawrence H. Gunn, Montrose, Calif., assignor to Pestcon Systems, Inc., Alhambra, Calif.

Division of Ser. No. 493,011, May 9, 1983, Pat. No. 4,579,714. This application Jan. 27, 1986, Ser. No. 823,023

Int. Cl.[4] A23L *3/34*

U.S. Cl. 99—482 **13 Claims**



1. A fumigant placement and residue removal assembly for use in placing solid fumigant within a body of grain or other bulk-stored commodity, comprising:

an elongated sleeve having an open end and a closed end, said sleeve being composed of gas-permeable, flexible fabric; and

an elongated, rigid filler pipe having opposite open ends, said filler pipe being disposed in said sleeve with a loose sliding fit with one end of the pipe near, but spaced from, the closed end of the sleeve and with the other end of the pipe outside the sleeve whereby the rigid pipe holds the flexible sleeve in an open condition along the length of the pipe and leaves a short flexible flap beyond the end of the pipe;

said filler pipe having a hollow interior defining a passage within said sleeve for delivering solid fumigant from outside said sleeve to the interior thereof at the end of the filler pipe within the sleeve;

whereby fumigant may be placed within a body of grain or other bulk-stored commodity by placing the sleeve therein with the filler pipe in the sleeve and then pouring fumigant into the filler pipe from outside the sleeve and progressively withdrawing the pipe from the sleeve while said flexible flap is anchored in the body of grain or other bulk-stored commodity.

4,641,574

POWER SCREW PROTECTOR FOR REFUSE COMPACTOR

Paul B. Chesnut, Center Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

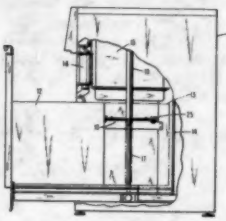
Filed Dec. 4, 1985, Ser. No. 804,463

Int. Cl.[4] B30B *1/18*

U.S. Cl. 100—229 A **22 Claims**

1. In a refuse compactor comprising a frame, a refuse drawer within the frame and a ram, screw means within the frame for movably supporting the ram alternatively in a first refuse compacting position within the drawer and a second position above the drawer, and drive means for driving said screw means to reciprocate said ram between said first and second positions:

a protective cover means surrounding said screw means, said cover means pivotably retained to and moving with said



ram and extending at least to the drawer when said ram is in the second position.

4,641,575

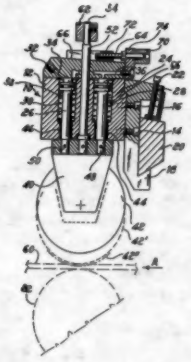
DEVICE FOR EMBOSSING AND/OR CREASING SHEET, OR ROLL MATERIAL

Elio Cavagna, Melegnano, Italy, assignor to Elio Cavagna S.r.l., Melegnano, Italy

Filed Dec. 17, 1985, Ser. No. 810,028

Int. Cl.[4] B41F *1/07*

U.S. Cl. 101—23 **7 Claims**



1. Device for embossing and/or creasing paper in sheet, or rolls, including a fixed structure, at least a tool holder, movable selectively and a system to adjust the degree of approach of the tool to the counter-roller, where the fixed structure is complete with a mobile, central rod, two symmetrical, side chambers where two pistons slide, with the relative stems, opposed by elastic means and a calibrated passage to supply a pressurised fluid in the upper part of each chamber; the tool-holder is fixed to the free-ends of the central rod and of the stems; and the system to adjust the degree of approach, includes a means to obtain an approximate approach and a means to achieve micrometric adjustment of the extent of the said approach.

4,641,576

CLAMPING DEVICE FOR PRINTING PLATES AND PRINTING CLOTHS ON PRINTING MACHINES

Klaus Güthling; Adolf J. Meyer, and Manfred Miethe, all of Lüneburg, Fed. Rep. of Germany, assignors to Fa. Wilhelm Barenschee, Luneberg, Fed. Rep. of Germany

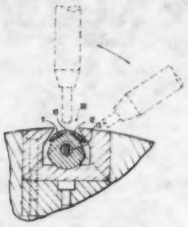
PCT No. PCT/EP85/00188, § 371 Date Dec. 3, 1985, § 102(e) Date Dec. 3, 1985, PCT Pub. No. WO85/05075, PCT Pub. Date Nov. 21, 1985

PCT Filed Apr. 26, 1985, Ser. No. 817,936

Claims priority, application Fed. Rep. of Germany, May 2, 1984, 3416187

Int. Cl.[4] B41F *27/06, 7/22*

U.S. Cl. 101—415.1 1 Claim



1. A clamping device for holding and tensioning one end of a flexible printing plate wrapped around the outer surface of a rotatable printing cylinder, said one end of the plate defining a reverse bent, acutely angled, stiffened edge, said device comprising:

(a) an elongate, axially bored shaft (10) rotatably disposed in a longitudinal recess (20) extending inwardly from the outer surface of the cylinder and axially parallel thereto,

(b) a pair of elongate chordal slots (11, 12) extending inwardly from opposite sides of the shaft and towards each other at an obtuse angle having an apex oriented towards an outer surface of the shaft and away from the axial bore thereof, said slots:

(1) terminating short of an intersection therebetween,

(2) having parallel opposite sidewalls to define constant slot widths, and

(3) said slot widths being sufficient to closely accommodate a reverse bent stiffened edge of a printing plate, and

(c) a torque bar (13) disposed in the shaft bore and operatively coupled to the shaft for biasing said shaft towards a neutral position whereat the slots are symmetrically disposed on opposite sides of a radius of the cylinder passing through the shaft axis such that a printing plate stiffened edge may be inserted into a slot from either side of the shaft upon the rotation thereof against the biasing force of the torque bar and the plate thereafter tensioned against the cylinder surface to thus accommodate the rotation of the cylinder in either direction during a printing operation.

4,641,577

APPARATUS FOR ADJUSTING THE PLATE SEGMENT OF AN OFF-SET LITHOGRAPHIC PRINTER

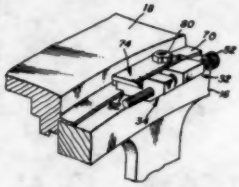
Peter K. Sweeny, 2411 Woolson Rd., Chattanooga, Tenn. 37406

Filed Apr. 12, 1985, Ser. No. 722,595

Int. Cl.[4] B41F *1/28*

U.S. Cl. 101—415.1 18 Claims

1. In an off-set lithographic printer having a rotational cylindrical drum including skeletal frame members and an image carrying plate segment mounted on said frame members, adjusting apparatus for changing the position of the plate segment relative to the frame members to align the image produced by said printer, said apparatus comprising a first block including a threaded bore extending therethrough, a second block including a threaded bore extending therethrough, a screw threadedly extending through the bores of both said first and said second blocks, means for securing said first block to one of said frame members adjacent said plate segment, a circumferentially extending slot formed in the plate segment adjacent to said first block, said slot opening toward said blocks and having edges defining the circumferential extents of the slot, each of said first and second blocks having protuberances extending remotely from the screw receiving threaded bores disposed in said slot, whereby rotation of said screw effects movement of said second block relative to said first block for abutting one of said edges of said slot by a surface of the protuberance of said second block to move the plate segment with the second block relative to said frame members, and a releasable clamp for securing the plate segment to at least the first block and thus the frame member in selected positions.



4,641,578

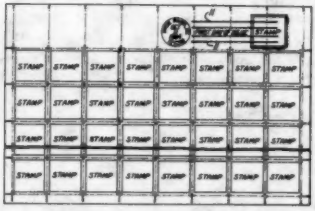
METHOD AND DEVICE FOR AUTHENTICATION OF FIRST DAY OF ISSUE STAMPS

Antonio A. Versaci, 2528 Peters La., Schenectady, N.Y. 12309

Filed Jun. 12, 1985, Ser. No. 743,783

Int. Cl.[4] B65P *27/04*

U.S. Cl. 101—426 17 Claims



1. A method for first day of issue authentication of a sheet of original stamps containing a selvage edge integrally formed with the sheet of stamps during printing; said method comprising affixing an extra original stamp of the same issue as the sheet of original stamps being authenticated in-line with an exposed portion of the selvage edge, and applying the First Day of Issue cancellation seal which includes a bulls eye containing the date and name of the post office performing the authentication and a portion of the killer bar cancellation segments of the cancellation seal to the exposed portion of the selvage edge in a manner such that the terminal ends of the killer bar cancellation segments of the seal impinge upon and cancel the extra original stamp affixed in-line with the exposed selvage edge portion of the sheet of stamps being authenticated.

4,641,579

PRINTING FOUNTAIN SOLUTION

Irwin B. Bernstein, Homewood, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Continuation-in-part of Ser. No. 377,978, May 13, 1982, abandoned. This application Nov. 21, 1984, Ser. No. 677,206

Int. Cl.[4] C09D *5/20*

U.S. Cl. 101—451 19 Claims

1. A method of practicing a lithographic printing process which includes a continuous dampening system, said method comprising the steps of preparing an aqueous fountain solution for maintaining desensitivity of printing plates, applying said fountain solution and an ink by a continuous dampening system to a lithographic plate and tranferrring an image from the plate to a surface, the improvement comprising preparing a thickened solution free of isopropyl alcohol the thickened solution comprising a thickening agent selected from the group consisting of hydroxypropylmethyl cellulose, polyvinyl pyrrolidone, polyacrylamide, polyalkylene glycol, or mixtures thereof and mixing said thickened solution with said fountain solution in an amount to provide the fountain solution with a viscosity of between about 20 seconds and about 22 seconds as measured by a Shell #1 cup at printing temperatures, thereby providing an alcohol-free, viscosity controlled fountain solution.

4,641,580

CIRCUIT APPARATUS FOR OPERATING FIREWORKS IGNITION

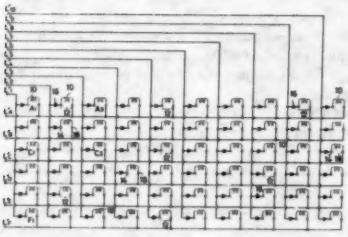
Motohiro Ogatsu, Fuchu, Japan, assignor to Marutamaya Ogatsu Fireworks Co., Ltd., Tokyo, Japan

Filed May 6, 1985, Ser. No. 731,239

Claims priority, application Japan, May 14, 1984, 59-94553

Int. Cl.[4] F23Q *7/02*

U.S. Cl. 102—217 6 Claims



1. A circuit apparatus for operating fireworks ignition comprising: a group of ignition operating switch means each having a plural number of pole means, positive terminal means and negative terminal means on the output side of said ignition operating switch means and connected respectively with each of positive line means commonly used for each file and with each of negative line means commonly used for each step of a circuit means, said positive line means and said negative line means being lined up in a plurality of vertical steps and horizontal files; an ignition pilot lamp means commonly connected with a pole of each of said ignition operating switch means to be lighted when even one of said ignition operating switch means is closed; and a group of block operation switch means having a plural number of pole means to perform on/off operation of a power source supply means in common with each file of said group of ignition operating switch means.

4,641,581

DUAL-FUNCTION STORAGE CONTAINER FOR PRILLED EXPLOSIVE

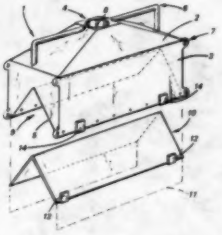
Chris A. Weickert, Ralston, and Gordon K. Briosi, Medicine Hat, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Sep. 21, 1984, Ser. No. 653,110

Claims priority, application Canada, Sep. 23, 1983, 437390

Int. Cl.[4] F42B *1/02*

U.S. Cl. 102—307 11 Claims



1. A storage container for a particulate, pourable explosive, comprising:

a plastic container with top, side and bottom walls, the top wall including a filling opening and the bottom wall having a downwardly concave shape;

closure means for closing the filling opening;

a metal liner conforming in shape to the bottom wall of the container; and

fastening means for selectively fastening the metal liner to the outside of the bottom of the container.

4,641,582

ELECTRIC OVERHEAD TROLLEY CONVEYOR

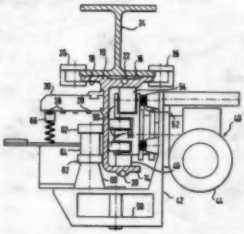
Georg Uttscheid, Madronstrasse 17,, D- 8201 Rosenheim, Fed. Rep. of Germany

Filed May 9, 1985, Ser. No. 732,510

Claims priority, application Fed. Rep. of Germany, May 21, 1984, 3418866

Int. Cl.[4] B61B *3/02;* E01B *25/22*

U.S. Cl. 104—93 3 Claims



1. A lower chord electric trolley conveyor comprising a rail having a vertical web and upper and lower flanges extending therefrom, said upper flange being directly connected to a support structure, and an electric trolley having a drive wheel engaging the upper surface of the lower flange of the rail and receiving current from a bus bar carried by the rail, characterized in that said upper flange extends from the vertical web of the rail from both sides while the lower flange extends only from one side, that the electric trolley wraps around the lower part of the rail and includes counter pressure rolls preceding and following the drive wheel in relation to the direction of

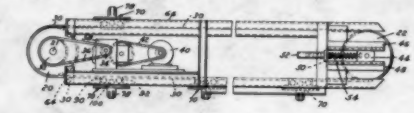
movement of the trolley, said counter pressure rolls engaging the surface of the upper flange facing the lower flange, that support rolls carried by the trolley engage both sides of the vertical web of the rail, and that the bus bar is attached to the side of the vertical web of the rail facing away from the drive wheel.

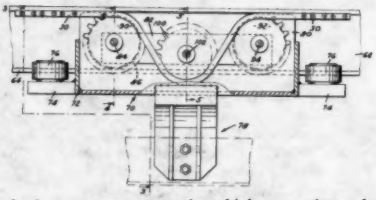
4,641,583

FREE ROTATION SPROCKET, DRAG CHAIN CONVEYOR SYSTEM

Earl J. Harrington, Oxford, Mich., assignor to Overhead Conveyor Company, Ferndale, Mich.

Filed Jul. 26, 1984, Ser. No. 634,553
Int. Cl.[4] B61B *3/00*
U.S. Cl. 104—172.1 **2 Claims**





1. A conveyor system in which a continuously moving power-driven chain drive is provided with a plurality of conveyor trolleys to be moved in a predetermined path by said chain drive and in which a plurality of chain engaging free rotating first sprockets on said trolley are positioned to guide said chain in a loop diverging from the general alignment of said chain wherein said loop creates a drag resistance which causes said trolley to move with said chain in said path when the path of the trolley is unobstructed,

that improvement in which opposed C-channels are disposed in spaced relation to provide a guide path for said first sprockets, at least two of said plurality of first sprockets being mounted for free rotation on axles extending transversely to said C-channels, support rollers on each end of said axles positioned to run on opposed ledges formed by one side of said C-channels, spaced members on said conveyor trolleys supported vertically on said axles on opposite sides of each said two sprockets, and guide rollers spaced longitudinally on said trolleys positioned between said opposed ledges to provide a horizontal guide for said trolleys.

2. A conveyor system in which a continuously moving power-driven chain drive is provided with a plurality of conveyor trolleys to be moved in a predetermined path by said chain drive, that improvement which comprises a plurality of chain engaging free rotating first sprockets on said trolley positioned to guide said chain in a loop diverging from the general alignment of said chain wherein said loop creates a drag resistance which causes said trolley to move with said chain in said path when the path of the trolley is unobstructed,

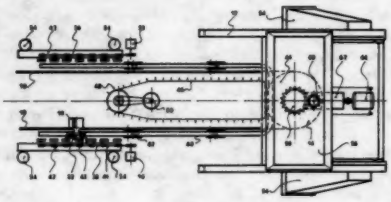
drive sprockets spaced longitudinally from each other on parallel axes carrying the chain drive in a closed loop path, one of said drive sprockets being power driven to move said chain in said closed loop path, means mounting one of said drive sprockets for sliding motion transversely, to its axis, means biasing said last one of said drive sprockets in a direction away from the other of said drive sprockets to maintain a tension on said chain drive, and power means to move said last one of said drive sprockets in said same direction to increase the tension on said chain drive and control the acceleration of said trolleys.

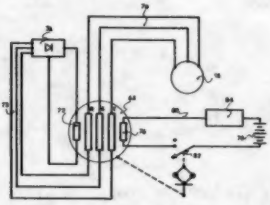
4,641,584

ELECTRICALLY DRIVEN DETACHABLE GONDOLA LIFT OR CHAIR LIFT

Jean-Jacques Bertrand, Fontaine, France, assignor to Pomagalski, S.A., Fontaine, France

Filed Oct. 1, 1985, Ser. No. 782,302
Claims priority, application France, Oct. 15, 1984, 84 15865
Int. Cl.[4] B61B *11/00*
U.S. Cl. 104—173.2 **6 Claims**





1. Aerial ropeway transport installation, notably a detachable chair lift or gondola lift, comprising:

two end stations,

end bull-wheels, on which a rope runs extending in an endless loop between the two stations,

a bull-wheel motor for driving said bull-wheels in rotation,

cars or chairs, which can be coupled to the rope in the loop and detached from the rope in the stations,

transfer rails located in the stations, on which the cars or chairs run detached from the rope,

driving means for driving the cars or chairs running on said transfer rails,

a synchronous electric motor to drive said driving means,

an electrical alternator and a kinematic chain connecting the alternator to the station bull-wheel to ensure that the alternator rotates at a multiple speed of that of said station bull-wheel,

and an electrical connection between said alternator and said synchronous electric motor to supply the latter with the alternating current produced by the alternator and to ensure synchronous rotation of the motor.

4,641,585

TERMINAL FOR A DETACHABLE GRIP CHAIRLIFT FOR GONDOLA LIFT

Serge Tarassoff, Fontaine, France, assignor to Pomagalski, S.A., Fontaine, France

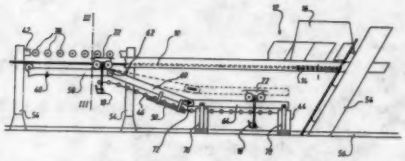
Filed Apr. 26, 1984, Ser. No. 604,144
Claims priority, application France, May 2, 1983, 83 07397
Int. Cl.[4] B61B *11/00, 9/00*
U.S. Cl. 104—173.2 **5 Claims**

1. A terminal for an aerial ropeway, in particular a chairlift or a gondola lift, having an endless continuously moving cable extending along uphill and downhill runs, and trucks with detachable grips for selectively coupling the chairs or gondolas to said cable, the terminal comprising:

a cable return sheave,

a transfer rail extending in the terminal between the uphill and the downhill runs of the cable, said trucks being uncoupled from the cable in the terminal and running on said transfer rail,

a grip release located at the entrance of the terminal adjacent said transfer rail for actuating a detachable grip to uncouple a truck from said cable, said transfer rail including successively a first section located at a first level adjacent the entrance of the terminal and having decelerating means for decelerating the truck uncoupled from the cable, a second section inclined downwardly relative to said first level, a third substantially horizontal adjustable section located at a second level, a fourth section inclined upwardly relative to said first level, and a fifth section located at the first level adjacent the exit of the terminal and having accelerating means for accelerating the truck



uncoupled from the cable to synchronize the speed of the truck with the speed of the cable,

a grip actuator located at the exit of the terminal adjacent said transfer rail for actuating said detachable grip to couple the truck onto the cable,

truck drive means for driving the truck along the transfer rail at slow speed,

a loading and/or unloading area located along said third horizontal section,

a framework on which said return sheave, said first and fifth sections, said grip release and said grip actuator are rigidly secured at said first level for the free passage of the chairs or gondolas therebelow regardless of the snow level in said terminal, and lifting means linked to said third section for adjusting said second level of the third section relative to the first level in accordance with the snow level at said loading and/or unloading area.

4,641,586

MAGNETIC SUSPENSION RAILWAY

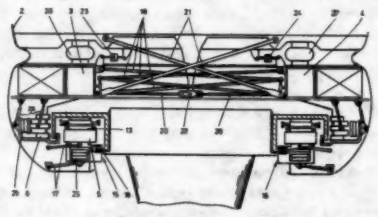
Luitpold Miller, and Hans-Georg Raschbichler, both of Ottobrunn, Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,587

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004704

Int. Cl.[4] B60L *13/06*

U.S. Cl. 104—284 **5 Claims**



1. In a suspension system for a magnetic suspension railway vehicle that is to travel in a longitudinal direction on a track having supporting rails, the suspension system including a plurality of hover frames distributed in the longitudinal direction and disposed on both sides of the vehicle, spring means connected to the hover frame for supporting the vehicle and for coupling the vehicle to the hover frames, a supporting magnet resiliently mounted to each hover frame for interacting with one of the supporting rails to support, guide, drive and brake and vehicle on the rail, a transverse magnet resiliently mounted to each hover frame for interacting with one of the supporting rails to laterally guide the vehicle with respect to the rail, gap control loop means connected to the supporting magnet and the transverse magnet of each hover frame for regulating a gap distance between each supporting and transverse magnet and the supporting rail interacting therewith, the gap control loop means having a plurality of autonomous gap control loops, the improvement comprising:

(a) each of said supporting and transverse magnets including at least four coils;

(b) each transverse magnet having adjacent coils with coil lengths selected so that, within each transverse magnet, coil peripheries of adjacent coils lie side-by-side and do not coincide;

(c) said coils of said supporting magnet and of said magnet being divided into two identical groups, the coils of each group being distributed over the total length of its respective magnet, each group being arranged so as to apply torques to its respective magnet with respect to the rails which is required for stabilization of a pitch movement for its respective magnet;

(d) the coils of each group being operatively connected to a separate autonomous gap control loop of the gap control loop means; and

(e) glide means connected to each of the supporting magnets and to each of the transverse magnets for engagement with one of the supporting rails to limit a free relative movement between the supporting and transverse magnets and the supporting rail.

4,641,587

SUSPENDED MOTORIZED VEHICLE

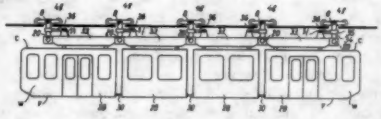
Fernand Dalliard, Villeneuve, Switzerland, assignor to Ateliers de Constructions Mecaniques de Vevey S.A., Switzerland

Filed Jul. 3, 1984, Ser. No. 627,611

Claims priority, application Switzerland, Jul. 4, 1983, 3747/83

Int. Cl.[4] B61B *3/02*

U.S. Cl. 105—3 **7 Claims**



1. A suspended motorized vehicle for transporting passengers and/or freight comprising a body (28) suspended on wheels (11) some of which are driving wheels and which travel on two laterally spaced apart tracks (2), the gauge between same being constant, said vehicle suspended from said tracks (2) by a plurality of central unitary forks each (8) having two prongs (9) directed upward above the horizontal plane of said tracks and straddling said tracks (2), the plane passing through the axes of said prongs (9) being perpendicular to the lengthwise direction of said tracks (2), the end of each said prong including a joint (18) provided by a horizontal shaft, an equalizing bar (12) pivotally supported by each said shaft in a vertical plane parallel to a respective one of said tracks, each end of each said equalizing bar (12) provided with one said wheel (11) mounted upon a bearing (13), each said wheel travelling on an adjacent one of said tracks (2), motor means (43) connected to at least one said wheel of each said equalizing bar of at least one said fork for rotating said driving wheels, and said unitary forks (8) each connected in their middle (10) to said body of the

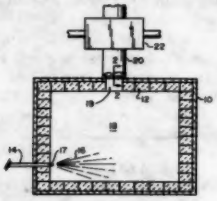
vehicle by a thrust bearing (20, 39) pivoting around a vertical shaft, wherein said body (28) of the vehicle is divided into several sections each having means connecting a respective section to at least one adjacent section, each said section including walls, a ceiling and a floor, said connecting means comprising elastic bellows (29) connecting two consecutive said sections to assure the continuity of said walls, ceilings and floors, and wherein each said body section (28) of the vehicle is surmounted by a rigid frame (33) connected to a respective section, said frame including a fastening connecting it to that of at least one adjacent said body section, said fastening disposed between two said frames and located between two consecutive said bodies, a sleeve (10) attached to a medial portion of each said fork, said fastening including a spherical connection (20) allowing oscillations between adjacent ones of said frames both in horizontal and vertical planes, and said thrust bearing connecting said fork sleeves to said body by means of said frame (33).

4,641,588

HEAT SHIELD

Edward M. Winter, Columbus; David E. Price, Plain City, and James E. Hook, Marengo, all of Ohio, assignors to Columbia Gas System Service Corp., Columbus, Ohio

Filed Jul. 8, 1985, Ser. No. 752,658
Int. Cl.⁴ F23J *15/00*
U.S. Cl. 110—203 **12 Claims**



1. In the combination with a furnace, a heat radiation shield, the combination comprising,

means for forming a furnace,

an inlet to said furnace to admit fuel and oxygen,

a burner connected to said inlet, said burner being mounted in operable position with the means forming the furnace to promote the combustion of the fuel and oxygen to produce heat and combustion products,

an outlet from said furnace,

said heat radiation shield being of porous material and mounted in said outlet, said shield and outlet being configured to require that substantially all combustion products exiting said furnace through said outlet pass through the pores of said shield, the shield having the property of passing combustion gases without changing their chemical properties except for reducing the nitrous oxide content,

said shield combining its pore size and its thickness to shield the environment beyond the shield from direct heat radiation from inside the furnace.

4,641,589

PROCESS FOR THE RAPID ASSEMBLY OF ELEMENTS COMPOSING A STRUCTURE

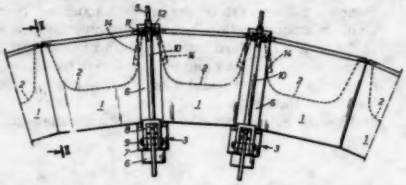
Joseph Recasens, Sorgues, France, assignor to Societe Europeenne des Produits Refractaires, Courbevoie, France

Filed Feb. 25, 1985, Ser. No. 704,916
Claims priority, application France, Feb. 27, 1984, 84 02935
Int. Cl.⁴ F23B *7/00*
U.S. Cl. 110—341 **7 Claims**

1. A process for the assembly of at least one adjacent pair of component structural elements to form an upright structure, each of said elements having a recess, comprising the steps of:

arranging said elements flat on the ground in the desired relative configuration;

temporarily joining together said elements side-by-side into an assembled unit by a device comprising a post, a pair of opposed, spaced jaw members mounted on said post for relative movement toward and away from one another, a



pair of wing members affixed to one of said jaw members, said wing members extending from opposite sides of said one jaw member and toward the other of said jaw members, said wing members respectively engaging said recess of said elements, and means for clamping said jaw members together about said joined elements,

lifting said device and said assembled unit and placing the same in a final position of the structure; and

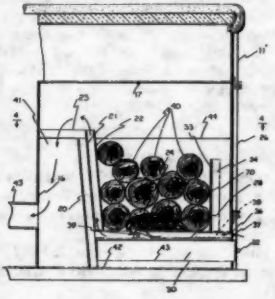
removing said device from said elements.

4,641,590

LIQUID HEATING SYSTEM

William T. Pope, Rte. 2, P.O. Box 37, Creekview Dr., Lucama, N.C. 27851

Filed Jul. 12, 1985, Ser. No. 754,294
Int. Cl.⁴ F23B *7/00*
U.S. Cl. 110—341 **2 Claims**



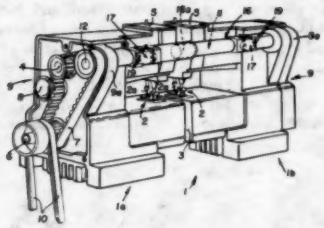
1. The method of creating a complete burn of combustible fuel within a heating system having a firebox at least partially surrounded by a liquid reservoir comprising: placing fuel within a firebox having a knee wall extending upwardly from the bottom of said firebox so as to define a primary and secondary chamber on opposite side of said knee wall, said fuel being placed in said primary chamber adjacent said knee wall so as to create an air passage extending generally horizontally below said fuel and upwardly between said knee wall and said fuel; creating a fire core within said fuel; using negative pressure to create a streamlined air flow through said air passage, over the top of said knee wall and into said secondary chamber, said air flow moving at a speed where only a portion of the air flow can enter said fire core to support combustion of the fuel and to carry byproducts of said combustion upwardly from the fire core such that said byproducts combine with said streamlined air flow at the top of said knee wall and create a self-supporting after-burn in said secondary chamber whereby a clean burning, virtually pollution-free heating means is provided.

4,641,591

ADJUSTABLE DRIVE SHAFT FOR MULTI-HEAD SEWING MACHINE

Pietro Draghicchio, Corsico, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy

Filed Dec. 12, 1985, Ser. No. 807,926
Claims priority, application Italy, Apr. 30, 1985, 21675/85[U]
Int. Cl.[4] D05B *25/00, 35/02*
U.S. Cl. 112—155 **6 Claims**



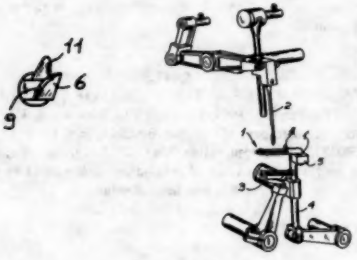
1. In a sewing machine designed to perform stitches simultaneously on the opposite edges of a workpiece of the type with a gap between the needles where said workpiece is arranged during sewing, said machine consisting of two sewing machines located opposite and adjacent each other, one of the right-hand type and the other of the left-hand type, and an external drive shaft connecting said two machines so that one is driven by the other, wherein said drive shat is provided with a universal joint at each of its ends and a sleeve expansion coupling at its middle area, said drive shaft being detachably fixed, at its ends, to two hubs, rotatably mounted on columns of said two machines and arranged parallel to and alongside an upper shaft of said two machines.

4,641,592

UPPER LOOPER PROVIDED WITH A HOLE AND USED FOR MAKING AN OVEREDGE STITCH WITH THREE THREADS IN SEWING MACHINES

Franco Marchesi, Pavia, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy

Filed Mar. 6, 1985, Ser. No. 708,913
Claims priority, application Italy, Jul. 31, 1984, 22761/84[U]
Int. Cl.[4] D05B *57/06*
U.S. Cl. 112—162 **3 Claims**



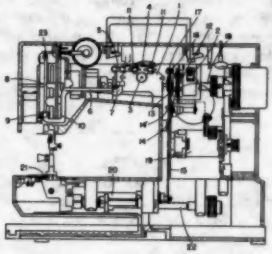
1. An upper looper of substantially rectilinear form provided with a hole and used for making an overedge stitch with three threads in overlock sewing machines having also a needle and a lower looper, wherein said upper looper comprises, at its end provided with a hole, a tip which is curved in the direction of the lower looper, a rounded and bulged projection adjoining the said curved tip which rounded and bulged projection faces the stitches already formed and is provided, on its upper edge with an inclined chamfer adapted to facilitate the transferring of the thread from the lower looper onto the upper looper, and wherein the substantially rectilinear profile of the upper looper is interrupted by substantially vertical and upwardly projecting lug designed to define a guide and stop member for the thread of the lower looper, said lug being disposed suitably mid-way along the length of the upper looper.

4,641,593

ZIGZAG AND TRANSPORT DEVICE FOR SEWING MACHINES

Fernando C. Echavarrio, P° de San Andres, 8 Eibar (Guipuzcoa), Spain

Filed Oct. 15, 1985, Ser. No. 787,436
Int. Cl.[4] D05B *3/02*
U.S. Cl. 112—443 **3 Claims**



1. A sewing machine of the type having a chassis, a main motor, and material drive features, wherein the improvement comprises:

a needle bar having a supporting piece attached thereto,

a first rack piece mounted on the chassis for reciprocating movement, said first rack having at one end a hingedly connected middle piece, and at an opposite end a hingedly connected lever,

said lever being fastened to the chassis and having a free end pivotably connected to said supporting piece,

first stepper motor means for providing a zigzag motion to the machine needle, said motor means having a drive shaft which reciprocates said rack to impart zigzag motion to said needle,

means for causing variations in the reciprocating motion of the rack so as to change the zigzag motion of the needle,

a feeding device,

an eccentric linked to a shaft which is powered by the main motor,

a second rack piece which through a middle piece is pivotably linked to a connecting rod,

said connecting rod having an upper end biased against said eccentric by a spring, and a lower end connected to an axle which in turn is connected to the feeding device of the machine, and

second stepping motor means for imparting a shifting movement to said second rack piece, said motor means having a second drive shaft which is connected to said connecting rod, thereby providing forward and backward shifting motion to said feeding device.

4,641,594

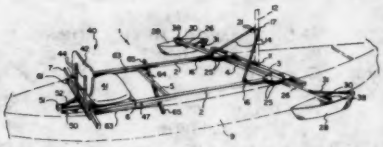
CANOE CONVERSION KIT

Harry Birkett, 4648-83 Street NW., Calgary, Alberta, Canada (T3B 2R2)

Filed Sep. 23, 1985, Ser. No. 778,946
Claims priority, application Canada, Oct. 26, 1984, 466465
Int. Cl.[4] B62B *15/00*
U.S. Cl. 114—43 **5 Claims**

1. An iceboat kit for converting a canoe to a sailboat, com-

prising substantially rectangular frame means for mounting on the top side edges of the canoe between the bow and stern thereof, said frame means including front crossbar means and rear crossbar means for supporting the frame means on the canoe side edges; first bracket means on said front crossbar means for mounting a sail mast on said frame means; arm means



adapted to extend outwardly from said front crossbar means for carrying pontoons on ice runners, seat means on said frame means proximate said rear crossbar means; and ice runner means on said frame means beneath said seat means, whereby when free of a canoe the kit can be used alone as an iceboat and, when mounted on a canoe, the kit converts the canoe to a sailboat.

4,641,595

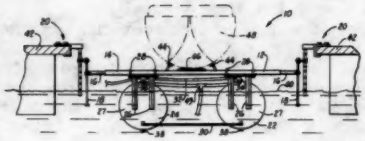
BOAT LIFT WITH SELF ALIGNING ATTACHMENT

James A. Pritchett, R.R. #2, Box 456, Grove, Okla. 74344

Filed May 13, 1985, Ser. No. 733,087

Int. Cl.[4] B63C *1/00*

U.S. Cl. 114—44 **4 Claims**



1. A boat lift with boat aligning attachment, the lift used for raising and lowering a boat in a boat slip, the slip disposed between spaced apart parallel dock sides, the boat lift comprising:

a pair of telescoping cross members perpendicular to the dock sides and having a boat support frame thereon for supporting the boat when the lift is raised;

at least one tank attached to the cross members;

means for pumping air into the tank and raising the lift and valve means for receiving water into to tank and lowering the lift;

four rigid vertical alignment shafts, the top of the shafts attached to and suspended from four height adjustment assemblies secured to the dock sides, the alignment shafts including dampening blocks attached to the top of the shafts for providing flexible movement of the shafts on the height adjustment assembly; and

a bearing housing attached to the opposite ends of the cross member and including a plurality of ball bearings disposed in the housing and positioned around each alignment shaft for providing a bearing surface as the cross members are raised and lowered on the vertical alignment shafts.

4,641,596

BOAT DOCK AND LIFT

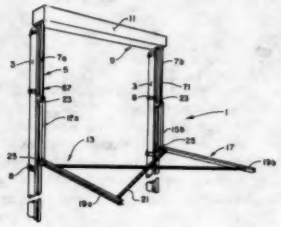
Layton J. Reprogle, 4430 Emminence, Berkeley, Mo. 63134, and Truman B. Reprogle, 6442 Vita, Affton, Mo. 63123

Filed Jun. 3, 1985, Ser. No. 740,424

Int. Cl.[4] B63C *3/06*

U.S. Cl. 114—44 **5 Claims**

1. A boat dock and boat lift comprising a frame having a pair of spaced upright members and a horizontal cross member extending between said upright members, a lift mounted on said frame, said lift having a support engageable with a boat hull, said lift being movable between a lowered position in which said support is below the surface of the water such that a boat may be floated into position above said support, and a raised position in which said support engages said boat hull from below and lifts the boat clear of the water, said lift having a pair of upright arms each of which is in generally face-to-face relation with a respective one of said frame upright members, means for movably mounting said lift upright arms on said frame upright members as said lift is moved between its raised and lowered positions, and means carried by said frame and connected to said lift upright arms for moving said lift between its raised and lowered position while maintaining said support in a generally horizontal position, this last said moving means comprising a piston and cylinder unit having one end thereof fixed with respect to said cross member, and the other end thereof movable with respect to said cross member, a first



pulley block secured to said cross member, a second pulley block slidable on said cross member and connected to said other end of said piston and cylinder unit, each of said pulley blocks having one or more pulleys journaled thereon, a first flexible cable having one end thereof secured with respect to said frame and being entrained around certain of said pulleys on said first and decond pulley blocks, and having its other end secured to one of said lift upright arms, and a second flexible cable having one end thereof secured with respect to said frame and being entrained around others of said pulleys on said first and second pulley blocks and having its other secured to the other end of said lift upright arms so that upon actuation of said piston and cylinder unit, said second pulley block is forceably moved on said cross member toward or away from said first pulley block thereby to move the other ends of said first and second cables an equal distance in generally vertical direction so as to ensure that said lift is maintained in its above said horizontal position as it is moved between its raised and lowered positions.

4,641,597

TOW APPARATUS AND METHOD OF INSTALLATION

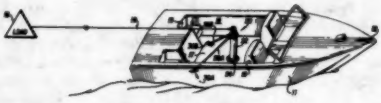
Harold G. Paxton, 1901 Sorrento Pl., Richmond, Va. 23233

Continuation-in-part of Ser. No. 690,542, Jan. 11, 1985, Pat. No. 4,561,375. This application Mar. 27, 1985, Ser. No. 716,736

The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.

Int. Cl.[4] B63B *21/56*

U.S. Cl. 114—253 **4 Claims**



1. Tow apparatus installable in a movable craft for towing a load situated behind said craft, said craft having at least one

interior surface including an essentially planar portion thereof, said apparatus comprising:

an essentially vertical post member adapted to have means connectable to said load secured thereto;

means for anchoring said vertical post member to a planar portion associated with one of said interior surfaces;

at least one support member having an upper end thereof connectable to said vertical post member proximate the top of said vertical post member; and,

means for anchoring said support member to a planar portion associated with one of said interior surfaces, said support member anchoring means comprising:

footing means, said footing means comprising a footing plate and two footing walls perpendicular thereto, said walls extending from one side of said plate to form a channel therebetween, said footing means being insertable into a complementary shaped aperture in said planar portion of said interior surface in a manner whereby said footing plate abuts said planar portion and said footing walls extend into said aperture;

ankle means, said ankle means being positionable in at least a storage position and a utility position, said ankle means in said storage position being essentially entirely accommodated in said footing channel, said ankle means in said utility position having a distal portion thereof extending beyond said footing plate and at an angle thereto, said distal portion of said ankle means having thereon means for mating with a lower end of said support member;

means for selectively moving said ankle means between said storage position and said utility position;

post receptacle means, said post receptacle means comprising a receptacle plate and a receptacle cylinder, said receptacle cylinder being insertable into a complementary shaped aperture in a planar portion of said interior surface and connected to an underside of said receptacle plate, said receptacle plate having an aperture therein to accommodate said lower end of said vertical post member, said receptacle cylinder having a major axis perpendicular to the plane of said receptacle plate and aligned with said receptacle plate aperture, said receptacle cylinder being essentially hollow for reception therein of said lower end of said post; and,

means for locking said vertical post member into said receptacle cylinder.

4,641,598

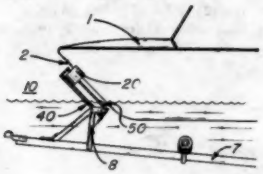
BOAT-TRAILER LATCH

Donald F. Hodges, Box 486, Ontario, Oreg. 97914

Filed Mar. 26, 1985, Ser. No. 716,268

Int. Cl.⁴ B60P *3/10*

U.S. Cl. 114—344 **10 Claims**



1. Boat latch apparatus for securing a boat to a trailer at varying water levels, said apparatus comprising:

First latch means comprising a framework, at least one latch door pivotally engaging said framework to define a retentive enclosure when said door is in a closed position, and means for mounting said first latch means to the bow of a boat; and

second latch means comprising a framework and an elongated latch pin affixed to the framework, said framework pivotally engaging a trailer adjacent the forwardmost end of the trailer, and said elongated latch pin operable to strike said door of said first latch means at a position along the length of said latch pin to open said door, and to be retained by said door and said framework of said first latch means.

4,641,599

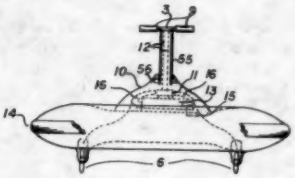
SPEED MANEUVERING WATER CRAFT AND CONTROLS

Charles E. Thomas, 998 E. Main St., #77, El Cajon, Calif. 92020, and Richard Harvey, 10828 Buggywhip Dr., Spring Valley, Calif. 92078

Filed Aug. 30, 1985, Ser. No. 771,022

Int. Cl.⁴ B63B *3/00*; **B63H** *21/165*

U.S. Cl. 114—346 **6 Claims**



1. A speed maneuvering water craft for the water recreation enthusiast which comprises a generally circular platform expanding about its edge into a toroidal frame to form concave and generally symmetrical top and bottom surfaces; means for propelling said craft, comprising: two rotating shafts mounted in a directionally fixed and generally horizontal position at diametrically opposite locations under said frame; a reversible propeller mounted on each of said shafts; and means for rotating said shafts independently from each other; two hydraulic motors, each driving one of said shafts; two hydraulic pumps, each supplying fluid to one of said motors; an internal combustion engine driving said pumps; independent means, for controlling each of said hydraulic pumps, comprising: a handlebar having two twist grip control handles; two throttle control valves each one of said valves being linked and responsive to one of said handles; wherein each of said throttle control valves comprises: two supply poppet valves each receiving pressurized fluid from one of said hydrualic pumps and discharging to two interconnection points; two supply/discharge conduits for fluid connected between said interconnection points and two reversible supply and discharge ports of one of said hydraulic motors; two discharge poppet valves each receiving said hydraulic motor discharge fluid from said interconnection points and returning said fluid to the suction of said hydraulic pump; and a pilot actuation system means of actuating alternate pairs of said supply and discharge valves so that said pressurized fluid is supplied to one of said reversible supply and discharge ports and said hydrualic motor discharge fluid from said other reversible supply and discharge port is relieved to said suction of said hydraulic pump.

4,641,600

ROLLING BOAT COVER

Wilmet P. Halvorsen, Box #104, Frontenac, Minn. 55026

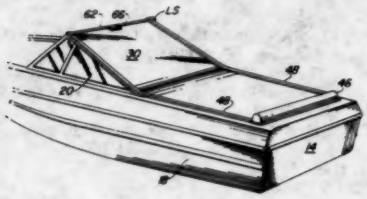
Filed Apr. 18, 1986, Ser. No. 853,512

Int. Cl.⁴ B63B *17/00*

U.S. Cl. 114—361 **7 Claims**

1. For a boat having a cockpit delineated by opposite fore-and-aft sides, a rear transom and a transverse front windshield wherein the sides respectively have upper edges extending substantially forwardly from the transom and thence sloping upwardly to and meeting the top of the windshield: a cover construction for enclosing the cockpit, comprising a pair of elongated guides fashioned to extend respectively continuous

along the side edges from the transom to the top of the windshield and including means for affixation to the edges, a roller spanning the channels at the transom, a flexible cover sheet wrapped on the roller and having opposite fore-and-aft marginal portions received respectively in the guides, the sheet



having a transverse front edge and being of such length that, when unrolled, it extends from the roller to dispose its front edge at the top of the windshield, means for rolling and unrolling the sheet, and means for attaching the front edge of the sheet to the top of the windshield.

4,641,601

UNDERWATER PAINTING

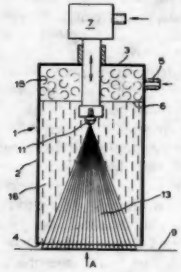
Edward Daley, Higherford Nr. Nelson, United Kingdom, assignor to Colebrand Limited, London, England

Filed Jul. 16, 1985, Ser. No. 755,614

Claims priority, application United Kingdom, Jul. 17, 1984, 8418155

Int. Cl.[4] B05B *7/08, 13/00, 15/04*

U.S. Cl. 118—305 **9 Claims**



1. Apparatus for underwater painting, comprising:

(i) a tubular shield having a closed end and an open end;

(ii) means for admitting gas under pressure to the interior of the shield;

(iii) means internally of the shield for providing a uniform gas flow towards the open end; the means for providing a uniform gas flow comprising a baffle plate through which gas from the inlet passes in use and which extends across the tubular shield, the baffle plate having perforations disposed as a plurality of spaced concentric circular arrays of perforations; and

(iv) a paint supply device penetrating the baffle plate and having a paint outlet downstream thereof whereby the paint exits the open end for painting an object to be painted.

4,641,602

DEVELOPING APPARATUS

Toshihiro Kasai, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

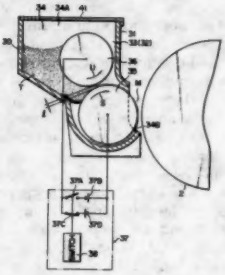
Continuation of Ser. No. 646,159, Aug. 31, 1984, abandoned.

This application Aug. 28, 1985, Ser. No. 770,013

Claims priority, application Japan, Aug. 31, 1983, 58-161254

Int. Cl.[4] G03G *15/08*

U.S. Cl. 118—653 **11 Claims**



1. A developing apparatus for developing a latent image by applying a developer to the latent image formed on a surface of an image carrier at a developing position opposing said image carrier, comprising:

a developer carrier for carrying said developer to said developing position;

developer supplying means for supplying said developer to said developer carrier;

regulating means, provided to oppose said developer carrier, for regulating said developer to be fed by said developer carrier; and

means for charging said regulating means to a first polarity and said developer carrier to a second polarity during a time of developing to cause said developer to be attracted to said developer carrier, and for charging said regulating means to said second polarity and said developer carrier to said first polarity during a time of nondevelopment to cause said developer to be repelled from said developer carrier.

4,641,603

EPITAXIAL GROWING APPARATUS

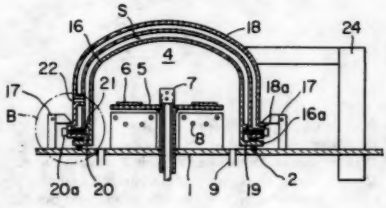
Yoshihiko Miyazaki; Taizan Goto, both of Numazu; Yoshizo Komiyama, and Kotei Iwata, both of Gotenba, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1984, Ser. No. 554,824

Claims priority, application Japan, Nov. 1, 1983, 58-205194

Int. Cl.[4] C23C *13/08*

U.S. Cl. 118—724 **10 Claims**



1. An epitaxial growing apparatus for the type in which an epitaxial thin film layer of a seminconductor substance is formed on a substrate mounted on a support member disposed in a sealed reaction chamber, comprising:

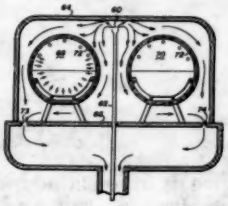
a base plate;
a quartz bell jar mounted on said base plate to define the reaction chamber therebetween;
a metal bell jar disposed outside said quartz bell jar so as to surround the same; and
an engaging member operatively connected to said metal bell jar for detachably engaging said metal bell jar with said quartz bell jar;
said quartz bell jar being provided with a flange portion of the lower end thereof, which is to be pressed downwardly towards said base plate by said metal bell jar through a resilient member interposed therebetween.

4,641,604

CHEMICAL VAPOR DEPOSITION WAFER BOAT

Arthur J. Learn, Cupertino, and Dale R. DuBois, Los Gatos, both of Calif., assignors to Anicon, Inc., San Jose, Calif.

Continuation of Ser. No. 607,065, May 4, 1984, Pat. No. 4,582,020. This application Dec. 5, 1985, Ser. No. 804,954
The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.
Int. Cl.[4] C23C *16/44*; B05C *13/02*
U.S. Cl. 118—728 **10 Claims**



1. A chemical vapor deposition wafer boat means for supporting a plurality of wafers in an evenly spaced, upright orientation substantially perpendicular to the axis of the boat during loading and chemical vapor deposition in a reaction chamber and for protecting the wafers from direct impingement of reaction gas streams entering the reaction chamber, the boat comprising a cylinder having closed ends and comprised of mutually engaging upper and lower hemicylinders, the upper hemicylinder having diffusion zones with gas flow passageways therein in the ends and in zones within from 10° to 60° from a horizontal plane through the cylinder axis and from 0° to 15° from a vertical plane through the cylinder axis, the remainder of the hemicylinder wall being baffle means without gas flow passageways for preventing direct impingement of gas streams on wafers in the boat, the ends and sidewall of the lower hemicylinder comprising gas diffusion zones, the gas flow passageways comprising from 0.5 to 40 percent of the surface area of the respective gas diffusion zones.

6. A chemical vapor deposition apparatus comprising a vapor deposition chamber having a gas inlet means positioned in the upper portion of the chamber for introducing gases into the chamber and a gas outlet means positioned in the lower portion of the chamber for removing gases from the chamber, a cylindrical wafer boat means positioned between the gas inlet means and the gas outlet means for supporting a plurality of wafers in an evenly spaced, upright orientation, the boat means comprising a cylinder having closed ends and comprised of mutually engaging upper and lower hemicylinders, the upper hemicylinder having diffusion zones with gas flow passageways therein in the ends and in zones within from 10° to 60° from a horizontal plane through the cylinder axis and from 0° to 15° from a vertical plane through the cylinder axis, the remainder of the hemicylinder wall being baffle means without gas flow passageways positioned between the gas inlet means and interior of the boat means for shielding wafers in the wafer boat from direct impingement of gases from the gas inlet means, the ends and sidewall of the lower hemicylinder comprising gas diffusion zones with gas flow passageways therein, the gas flow passageways comprising from 0.5 to 40 percent of the surface area of the respective gas diffusion zones.

4,641,605

ANIMAL LITTER AND METHOD OF PREPARATION

Charles Gordon, Vernon, Calif., assignor to Kal Kan Foods, Inc., Vernon, Calif.

Filed Nov. 29, 1985, Ser. No. 803,135
Int. Cl.[4] A01K *1/015*
U.S. Cl. 119—1 **21 Claims**

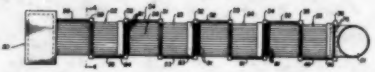
1. An animal litter, which comprises: granular litter material; and an effective amount of an oxidizing agent selected from the group consisting of alkali metal persulfate and ammonium persulfate.

4,641,606

CELL BOILER

Alfred L. Roberts, West Monroe, La., assignor to Delta Salvage Energy, Inc., Monroe, La.

Filed Feb. 26, 1986, Ser. No. 833,122
Int. Cl.[4] F22B *25/00*
U.S. Cl. 122—214 **8 Claims**



1. A cell boiler comprising a furnace, plural connected cell boiler units extending away from one side wall of the furnace, each cell boiler unit including therein a multiplicity of narrow cells and intervening narrow gas flow passages extending substantially from top-to-bottom of said units, the gas flow passages of said units being in communication lengthwise of said units to define a continuous gas flow passage away from the furnace and communicating with a fire box of the furnace, a water preheating means substantially on the bottom of the boiler including a circuitous conduit for water spanning the bottoms of said units of the boiler, a preheated water conduit connected in and extending away from the furnace cooling means, a preheated water holding tank having a sediment chamber connected in the preheated water conduit, a high pressure pump for preheated water connected in the preheated water conduit between said holding tank and inlet means connected with the interiors of said cells of the boiler units, means to deliver water at a comparatively low pressure through said preheating means, and means to deliver the preheated water at a comparatively high pressure through the interiors of said cells of the boiler units serially while simultaneously hot gases from the fire box of said furnace are traversing the continuous gas passage through said units defined by the narrow spaces between said cells generally in counterflow heat transfer relationship to the water being delivered through the cells of said units serially, and a steam collecting means communicating with the cells of at least the cell boiler unit nearest said furnace.

4,641,607

MULTISTAGE EVAPORATION BOILING EQUIPMENT

Janos Balazs; Adam Bocskor; Otto Cseh, and Rezso Iring, all of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

Filed Jul. 31, 1985, Ser. No. 760,992
Int. Cl.[4] F22B *37/22*
U.S. Cl. 122—360 **4 Claims**

1. A multistage evaporation boiling equipment in the form of a single unit, each stage having a different pressure, comprising:

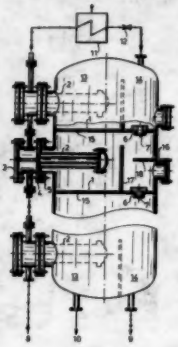
two or more heat exchanger units, each having a bundle of tubes which provide a heat exchanging surface, each of

said units sealingly inserted parallel to one another at different points along a length of a central column through which a liquid may pass by condensing and vaporizing;

one or more separating walls attached inside said column and separating at least one heat exchanger unit from another;

an opening in said separating wall for permitting passage of a vapor of said liquid from one stage to another;

a choke means within said opening for restricting the size of said opening and thereby controlling the amount of vapor passing therethrough;



at least half of said heat exchangers having a portion of the exchanger protruding outward from a wall of said column;

a flange attached to said portion of said heat exchanger protruding from said column;

an outer tube wall joining with said flange to form a seal; and

a passageway connecting said outer tube wall to a cover providing a second seal, both of said seals being detachable to permit the removal of said heat exchanger with its bundle of tubes from said column.

4,641,608

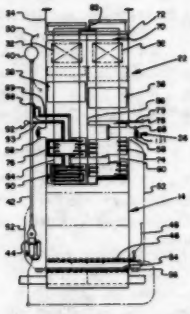
STEAM GENERATOR WITH EXPANSION JOINT

Richard E. Waryasz, Longmeadow, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 4, 1985, Ser. No. 697,812

Int. Cl.[4] F22B *37/24*

U.S. Cl. 122—510 **4 Claims**



1. A fluidized bed steam generator for generating high temperature steam comprising:

a bottom supported perforated plate for supporting fluidizable fuel which may be burned forming combustion gas products;

a bottom supported furnace wall structure comprised of gas tight enclosing sidewalls extending upwardly from said perforated plate for the conduction of combustion gas products therefrom;

said furnace wall structure enclosing a first plan area at the perforated plate elevation, and a reduced plan area at an upper elevation;

a top supported gas pass wall structure located above said furnace structure for receiving combustion gas products therefrom;

a gas tight expansion joint joining the periphery of the lower end of said gas pass wall structure to the periphery of said furnace wall structure for permitting relative vertical movement of the two structures while maintaining a gas tight seal;

convection heating surface supported within said furnace wall structure at an upper elevation below said expansion joint, whereby the combustion gas products must pass over said convection surface before reaching the elevation of said expansion joint.

4,641,609

CYLINDER HEAD FOR DOHC ENGINE

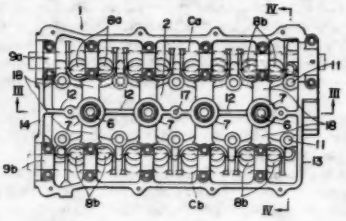
Yoshimichi Tanaka, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 13, 1986, Ser. No. 818,361

Claims priority, application Japan, Jan. 19, 1985, 50-8097

Int. Cl.[4] F02F *1/38*

U.S. Cl. 123—41.82 R **16 Claims**



1. A cylinder head of generally elongated configuration for a multicylinder DOHC internal combustion engine having a plurality of cylinders each with a spark plug, and also having a pair of camshafts for driving intake and exhaust valves, respectively, and mounted atop the cylinder head so as to extend in a direction longitudinally thereof in parallel and spaced relationship with each other, which cylinder head comprises:

an upper deck to provide a portion of outer wall for a space of engine coolant;

tubular columns equal in number to the spark plugs, said columns being integrally formed with the cylinder head and outwardly extending from said upper deck so as to surround the respective spark plugs; and

a connecting rib for connecting each neighboring columns together, said connecting rib extending in a direction parallel to the longitudinal sense of the cylinder head.

4,641,610
AIR INTAKE SYSTEM OF A MULTICYLINDER INTERNAL COMBUSTION ENGINE

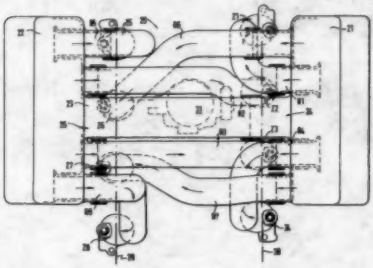
Erwin Rutschmann, Bad Herrenalb, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1985, Ser. No. 709,432

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1984, 3408899

Int. Cl.⁴ F02B *27/00*

U.S. Cl. 123—52 MV **5 Claims**



1. An air intake installation of a multi-cylinder internal combustion engine having an overall cylinder displacement and whose cylinders are combined into similar mutually oppositely disposed cylinder groups, comprising a substantially I-shaped manifold means arranged between said cylinder groups as common air intake means including two approximately equally large resonance chamber means and a connecting pipe means therebetween, one resonance chamber means being adjacent each cylinder group, suction pipes connecting a respective resonance chamber means at sides thereof disposed opposite connecting places of the connecting pipe means with individual cylinders of the corresponding cylinder group, the air intake means being constructed as tuned-intake, pressure-charging system in that overall volume of the resonance chamber means is approximately equal to overall displacement of all cylinders of the internal combustion engine, a suction connection terminating approximately perpendicularly in the connecting pipe means, the center of the suction connection having a first distance to the one resonance chamber means and a larger distance to the other resonance chamber means, and wherein between a volume of each of the two resonance chamber means and the distances, the following relation exists:

$$V1/V2 = S2/S1$$

wherein V1 and V2 are the volumes of the one and other resonance chamber means and S2 is the distance from the center of the suction connection to the other resonance chamber means, while S1 is the distance from the center of the suction connection to the one resonance chamber means.

4,641,611
OSCILLATORY MOTION APPARATUS

Alfred H. Stiller, and James E. Smith, both of Morgantown, W. Va., assignors to West Virginia University, Morgantown, W. Va.

Continuation-in-part of Ser. No. 628,248, Jul. 6, 1984, abandoned. This application Feb. 27, 1985, Ser. No. 706,153

Int. Cl.⁴ F02B *75/22*

U.S. Cl. 123—55 A **15 Claims**

1. Oscillatory motion apparatus comprising

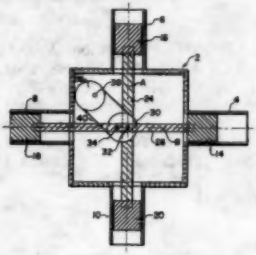
first rod means mounted for oscillating movement in a first direction,

second rod means mounted for oscillating movement in a second direction,

first trammel gear means pivotally secured to said first rod means by first pivot means,

said first trammel gear means pivotally secured to said second row means by second pivot means, whereby coordinated oscillating movement of said first rod means and said second rod means will effect responsive rotational and translational movement of said trammel gear means,

said first pivot means being relatively spaced from said second pivot means, p1 eccentrically mounted output gear



means having an axially fixed mounting, operatively associated with said trammel gear means for effecting rotational movement responsive to rotation and translation of said trammel gear means, and

said output gear means having an output gear and a rotatable output shaft positioned coaxially with the eccentric mounting of said output gear, whereby the rotational component of the movement of said trammel gear means will effect rotation of said output shaft.

4,641,612
ELECTRIC STARTING AID FOR AN INTERNAL COMBUSTION ENGINE

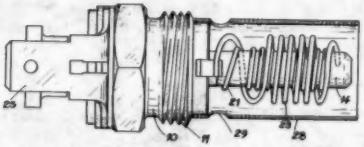
Brian J. Chalke, Feltham, England, assignor to Lucas Industries public limited company, Birmingham, England

Continuation of Ser. No. 545,634, Oct. 26, 1983, abandoned. This application Jul. 3, 1985, Ser. No. 751,480

Claims priority, application United Kingdom, Nov. 9, 1982, 8231946

Int. Cl.⁴ F02N *17/04*

U.S. Cl. 123—145 A **3 Claims**



1. An electric starting aid for an internal combustion engine of the kind having a body defining a fuel inlet, a hollow electrically conductive stem extending from the body, a temperature responsive valve located in the stem, said valve when said stem has attained a sufficiently high temperature, opening to permit fuel flow to an outlet defined in the stem, an electric heating element which when energised heats the stem to actuate the valve and also raises the temperature of the stem to a value sufficient to cause vapourisation of the fuel leaving the opening and an electric ignition element acting in use to ignite the vapourised fuel in the region of the stem, securing means for electrically securing one end of said electric heating element to said stem for supporting said electric heating element at said one end and holding said electric heating element tightly about said stem, electrical connection means for electrically connecting another end of said electric heating element to said body, means for electrically securing one end of said electric ignition

element to said stem, electric terminal means for electrically connecting another end of said electric ignition element to one terminal of a source of electric power, means connecting said body to another terminal of said source of electric power whereby said electric heating element and said electric ignition element are in series and each has one end thereof electrically secured to said stem, electrical insulating means interposed between said stem and said body, said electric heating element being tightly wound around said stem with said securing means maintaining the tight winding of said electric heating means.

4,641,613

PROCESS FOR THE STARTING AND LOW-LOAD RUNNING OF A DIESEL ENGINE AND A DIESEL ENGINE PUTTING THIS PROCESS INTO PRACTICE

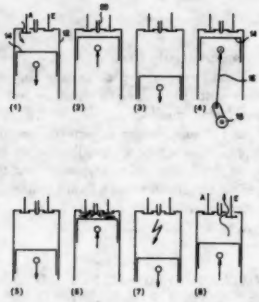
Jacques Delesalle, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, France

Filed Feb. 22, 1985, Ser. No. 704,173

Claims priority, application France, Mar. 2, 1984, 84 03256

Int. Cl.[4] F02N *17/02*

U.S. Cl. 123—179 H **9 Claims**



1. A process for the starting and low-load running of a diesel engine with electronic monitoring of the control of the injectors and of the valves thereof, the said process comprising adjusting the said controls to keep both the inlet and exhaust valves closed and to cut off fuel injection, in at least some of the cylinders of the engine, during several successive compression/expansion cycles, by means of which the air contained in the cylinder as a result of the preceding intake stroke of the piston is heated as a result of several successive compressions, until the ignition temperature is reached at the first fuel injection.

4,641,614

STARTER DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Gerhard Krebs, Waiblingen, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Aug. 19, 1985, Ser. No. 767,181

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1984, 3430793

Int. Cl.[4] F02N *1/00*

U.S. Cl. 123—185 BA **7 Claims**

1. A starter device for an internal combustion engine of an apparatus such as a portable handheld chain saw, the engine having a crankshaft and the apparatus including a component connected to the crankshaft so as to transmit a starting torque thereto in a predetermined rotational direction, the starter device comprising:

a bearing pin defining a rotational axis and being mounted on said apparatus;

a rope rotor having a starter rope wound thereon and being rotatably mounted on said bearing pin so as to be rotatable about said axis;

teeth means formed on said component;

a spring clip having two mutually adjacent legs conjointly defining an end portion for holding said clip to said bearing pin and said rope rotor on said bearing pin, said mutually adjacent legs also conjointly defining a guide portion extending outwardly from said end portion;

a pawl having an outer free end and being pivotally mounted on said rope rotor so as to pivot outwardly about a pivot axis parallel to said rotational axis for engaging said teeth means with said free end to impart a torque to said component when said rotor is actuated by pulling said starter rope from the rope rotor;

said pivot axis and said rotational axis conjointly defining a predetermined plane;

said pawl having a guide member formed thereon for engaging said guide portion for guiding said pawl in its pivotal movement between a stop position whereat said pawl is disengaged from said teeth means and said guide member lies in contact with one of said legs of said guide portion at a predetermined contact location on said one leg and an outward position whereat said pawl is engaged with said teeth means; and,

said one leg of said guide portion being curved to place said contact location ahead of said predetermined plane when viewed in said rotational direction so as to cause the force exerted by said guide member to act upon said one leg in said rotational direction thereby rotating said spring clip in said direction and holding said guide member in said stop position after said engine is started and rotating.

4,641,615

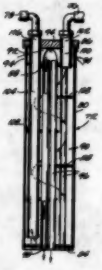
MARINE PROPULSION DEVICE OIL COOLING ARRANGEMENT

Arthur R. Ferguson, Northbrook, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 23, 1985, Ser. No. 779,273

Int. Cl.[4] F01M *1/00*

U.S. Cl. 123—196 AB **16 Claims**



1. A marine propulsion device comprising a propulsion unit adapted to be mounted on the transom of a boat for pivotal movement relative to the transom about a generally vertical

steering axis, and about a generally horizontal tilt axis, said propulsion unit including a rotatably mounted propeller, and an engine drivingly connected to said propeller and including a cooling water jacket, and a fluid cooler including a portion located internally of said water jacket and having therein a fluid passage adapted to communicate with a source of fluid to be cooled in said fluid cooler.

4,641,616

INTERNAL COMBUSTION ENGINE

Robert D. Lampard, Welshpool, Australia, assignor to Barrack Technology and Baralaba Pty. Limited, both of, Australia

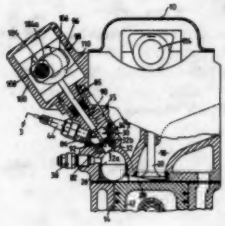
PCT No. PCT/AU84/00121, § 371 Date Mar. 1, 1985, § 102(e) Date Mar. 1, 1985, PCT Pub. No. WO85/00410, PCT Pub. Date Jan. 31, 1985

PCT Filed Jun. 29, 1984, Ser. No. 717,271

Claims priority, application Australia, Jul. 1, 1983, PG0090/83

Int. Cl.⁴ F02B *19/02*

U.S. Cl. 123—256 **6 Claims**



1. An internal combustion engine comprising a main combustion chamber communicating with a subsidiary combustion chamber and flow control means for controlling fluid flow between these, the control means being effective to at least provide a substantial restriction to communication between the combustion chambers, prior to ignition of a subsidiary air fuel charge introduced into the subsidiary combustion chamber in use of the engine, and to subsequently effect relief of said restriction whereby ignited said subsidiary air fuel charge is caused to pass to said main combustion chamber via a passageway extending from the subsidiary combustion chamber to effect ignition of a main working fluid charge in the main combustion chamber, the igniting working fluid charge then expanding against a moveable part of the engine to effect operation thereof, wherein said control means comprises a cylindrical element moveable in a lengthwise direction of said passageway and arranged to execute lengthwise reciprocatory motion when the engine is operated, said element having a radially outwardly directed peripheral surface portion thereon which portion is caused to be moved into adjacent relationship with a complementary peripheral surface portion of the passageway, during said reciprocatory movement, whereby to effect said at least substantial restriction of communication between the combustion chambers and is caused to be moved away from said surface portion of the passageway during said reciprocation to present clearance between the surface portions for effecting said relief of said restriction, and further wherein said element is arranged to move through said passageway, during said reciprocation, whereby to be clear of the surface portion of the passageway respectively at respective opposite extremes of the reciprocatory movement, whereby the control means is in an open condition at such extremes and in a substantially closed condition at an intermediate position between said extremes.

4,641,617

DIRECT INJECTION TYPE INTERNAL COMBUSTION ENGINE

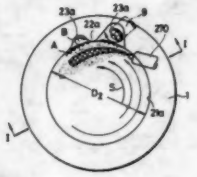
Taro Aoyama, and Yujiro Oshima, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Apr. 16, 1984, Ser. No. 600,717

Claims priority, application Japan, Apr. 16, 1983, 58-67582

Int. Cl.⁴ F02B *19/08*

U.S. Cl. 123—262 **16 Claims**



1. A direct injection type reciprocating internal combustion engine comprising:

a cylinder block having a cylinder bore;

a cylinder head mounted on said cylinder block;

a piston reciprocally fitted in the bore of said cylinder block and defining a combustion chamber together with said cylinder block and said cylinder head;

intake means for feeding said combustion chamber with intake air and having swirl means for swirling the intake air being introduced into said combustion chamber, a main recess being formed in said combustion chamber for accelerating the swirled intake air which is prepared and introduced by said swirl means;

an auxiliary recess formed on a side wall of said main recess along which the swirled intake air flows for generating secondary swirl in said auxiliary recess in a direction opposite that of said swirled intake air and for generating turbulence between said swirled intake air and said secondary swirl, an acute angle being formed between an extended line which is tangential to a wall surface of the main recess and an upstream side wall surface of the auxiliary recess which communicates with the main recess, said auxiliary recess upstream side wall surface being formed to project radially outwardly of the main recess and said extended tangential line, and

fuel feed means comprising a fuel injector, connected to a fuel supply source, comprising a fuel injector nozzle disposed to supply fuel directly into the main recess and located nearby an upstream portion of said auxiliary recess with respect to the flow direction of the swirled intake air in said main chamber, said fuel injector nozzle being tangentially directed to wall surface of said main recess nearby a downstream portion of said auxiliary recess in the flow direction of the swirled intake air therein, said fuel injection nozzle supplying the injected fuel along the flow direction of swirled intake air, such that the introduction of air into fuel droplets fed from said fuel injector is affectively accelerated by said swirled intake air and said secondary swirl,

whereby the combustion efficiency of said internal combustion engine is improved.

4,641,618

OVERSPEED/OVERHEAT CIRCUIT WITH A LATCH FOR CAPACITIVE IGNITION SYSTEMS

Peter Dogadko, Chicago, and David Enlow, Wadsworth, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

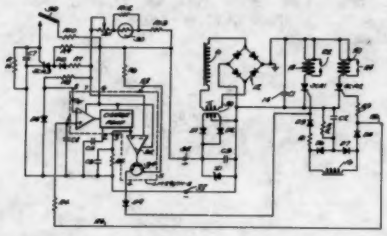
Filed Nov. 8, 1985, Ser. No. 796,088

Int. Cl.⁴ F02P *11/00*; F02D *31/00*; F02B *77/08*

U.S. Cl. 123—335 **12 Claims**

1. An engine ignition system including, engine speed respon-

sive means operative to produce a signal to disable said ignition system in response to an engine speed greater than a predetermined maximum to thereby limit engine speed to such maximum, temperature responsive means operative in response to a predetermined engine overheat temperature to change the



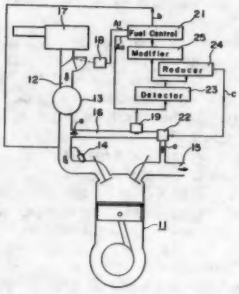
speed to which said speed responsive means responds to a speed lower than said maximum speed, and latch means operative to keep the speed to which said speed responsive means responds at said lower speed upon removal of said overheat temperature.

4,641,619

FUEL INJECTION CONTROL IN SUPERCHARGED ENGINE

Haruo Okimoto; Syuzi Mithui, and Hiroshi Ebino, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 27, 1985, Ser. No. 769,704
Claims priority, application Japan, Aug. 30, 1984, 59-181244
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—479 **12 Claims**



1. A fuel injection control system in a supercharged engine, which comprises, in combination:

an intake system for the supply of suction air to at least one combustion chamber of the engine and including an air cleaner;

an exhaust system for the discharge of exhaust gases from the combustion chamber;

a first air flow sensor means disposed in the intake system downstream of the air cleaner for detecting the flow of the suction air entering the intake system through the air cleaner;

a supercharger disposed in the intake system downstream of the first air flow sensor means for providing the combustion chamber with a supercharged air;

a secondary air supply passage extending from a portion of the intake system downstream of the supercharger to the exhaust system for supplying a portion of the supercharged air to the exhaust system;

a second air flow sensor means disposed in the secondary air supply passage for detecting the flow of the air towards the exhaust system;

a fuel control means operable in response to respective outputs from the first and second sensor means to detect the total flow of the suction air and the flow of secondary air flowing through the supply passage and to control the quantity of fuel to be injected, which fuel quantity corresponds to the difference between the total flow of the suction air and the flow of the secondary air;

an abnormality signal detecting means for detecting the generation by the second sensor means of a signal of a value deviating from a predetermined range of values;

a reducing means for controlling the flow of the secondary air so as to decrease it in the event that the detecting means detects the occurrence of an abnormality; and

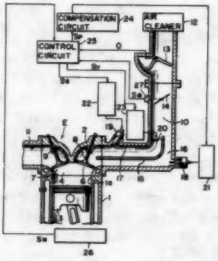
a control modifying means for, in the event of the abnormality, modifying the fuel control means so as to control the quantity of fuel to be injected solely in dependence on the output from the first sensor means.

4,641,620

FUEL INJECTION CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

Takeshi Yoshimura, Higashi-Hiroshima; Mutsuro Sameshima, Hiroshima; Toru Nakanishi, Kure, and Shigeo Kato, Higashi-Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 13, 1985, Ser. No. 765,242
Claims priority, application Japan, Aug. 14, 1984, 59-169676
Int. Cl.[4] F02M *35/10*
U.S. Cl. 123—432 **9 Claims**

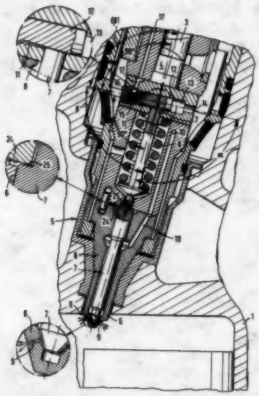


4. An engine intake system including first intake passage means leading to combustion chamber means, second intake passage means substantially separated from said first intake passage means and leading to said combustion chamber means, shut-off valve means provided in said second intake passage means for closing said second intake passage means under a light load engine operation, first fuel injection valve means provided in said first intake passage means, second fuel injection valve means provided in said second intake passage means, fuel injection control means for operating said first fuel injection valve means under a first engine operating condition and for operating said first and second fuel injection valve means under a second engine operating condition, said control means including means for determining a basic fuel supply quantity in accordance with an engine operating condition and compensating means for determining a compensation factor, which changes in accordance with engine speed, for momentarily changing the fuel supply based on said basic fuel supply quantity in a transient period between the first and second operating conditions in accordance with the engine speed so that a stepwise change in engine output torque can be avoided.

4,641,621
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Günther Herdin, Steyr, Austria, assignor to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Jun. 5, 1985, Ser. No. 741,609
Claims priority, application Austria, Jun. 6, 1984, 1857/84
Int. Cl.[4] F02M 57/02
U.S. Cl. 123—446 4 Claims



2. A fuel injection nozzle adapted for use in an internal combustion engine, which nozzle comprises:

(a) a casing; (b) a nozzle needle operable between open and closed positions supported in said casing; (c) nozzle orifice means obturated by said needle when in closed position; (d) spring means biasing said needle into the closed position;

said nozzle needle being adapted for an axial stroke opening said nozzle orifice means against the bias of said spring means, and having a needle axis;

(e) conduit means connected with said casing and adapted for feeding fuel under pressure thereinto to act on said nozzle needle for carrying out said opening stroke;

(f) a cylinder having a cylinder axis intersecting said needle axis under a first angle slightly deviating from 90°;

(g) a piston lodged in said cylinder and having a piston axis; said piston including piston spring means for biasing said piston and a piston skirt having a continuous flat part formed on the external surface thereof, said flattened part extending in a plane forming with a plane normal to said piston axis a second angle being of the same size as said first angle but opening in a direction opposite that in which said first angle opens;

(h) abutment means comprising said flattened piston skirt part facing toward said nozzle needle and being adapted for limiting said opening stroke of said nozzle needle; and

(i) means for adjusting the position of said abutment means relative to said nozzle needle, said position adjustment means comprising

(1) a control unit adapted for detecting the working conditions of said engine prevailing at a given time and for generating signals in response thereto;

(2) a pressure-regulating valve adapted to be controlled by said control unit; and

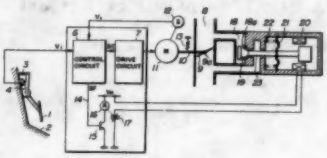
(3) feeding line means adapted for feeding a pressure medium via said pressure-regulating valve into said cylinder to act therein on said piston against the bias of said piston spring means,

whereby said axial stroke of said nozzle needle is continuously adjustable over the working range of said engine.

4,641,622
APPARATUS FOR THROTTLE VALVE CONTROL

Terukiyo Murakami, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 21, 1985, Ser. No. 747,177
Claims priority, application Japan, Jun. 22, 1984, 59-127351
Int. Cl.[4] F02M 51/00
U.S. Cl. 123—479 6 Claims



1. An apparatus for use with an internal combustion engine having an accelerator pedal and a throttle valve situated within an induction passage for controlling movement of said throttle valve in response to a change in the position of said accelerator pedal, comprising:

said induction passage having an auxiliary passage bypassing said throttle valve;

a control valve movable within said auxiliary passage for controlling air flow through said auxiliary passage;

a signal source for generating an electrical signal indicative of the position of said accelerator pedal;

a control circuit operable to determine a value corresponding to a setting of the position of said throttle valve in response to said accelerator pedal position indicative signal;

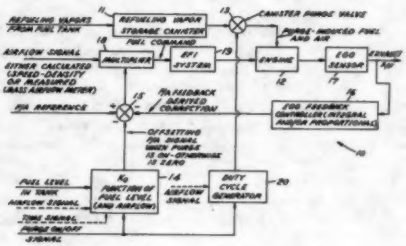
a throttle actuator connected to said control circuit for moving said throttle valve to said determined setting; and

said control circuit including means for forcing said throttle actuator to close said throttle valve and moving said control valve to a predetermined open position to permit air flow through said auxiliary passage when a failure occurs in the operation of said control circuit.

4,641,623
ADAPTIVE FEEDFORWARD AIR/FUEL RATIO CONTROL FOR VAPOR RECOVERY PURGE SYSTEM

Douglas R. Hamburg, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 29, 1985, Ser. No. 759,724
Int. Cl.[4] F02B 33/00
U.S. Cl. 123—518 10 Claims



1. A method of controlling air/fuel ratio perturbation in response to purging of fuel vapors from a vapor canister storing fuel vapors from the fuel tank of an internal combustion engine including the steps of:

generating a base fuel command;

actuating purging of the fuel vapors; and

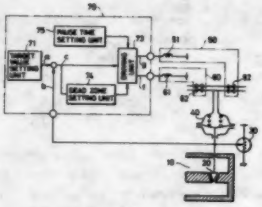
feeding forward an offsetting fuel command signal to modify the base fuel command signal whenever fuel vapor purging is occurring in order to compensate for the fuel and air that enter the engine via the purge line thereby reducing air/fuel ratio perturbations.

4,641,624

EXHAUST GAS RECIRCULATION CONTROL METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINE

Kazumichi Tsutsumi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1984, Ser. No. 576,648
Claims priority, application Japan, Feb. 3, 1983, 58-17137
Int. Cl.⁴ F02M *25/06*
U.S. Cl. 123—571 **7 Claims**



1. An exhaust gas recirculation control method for operating an exhaust gas recirculation control device including a needle valve provided in an exhaust gas recirculation passage for setting an effective diameter of said passage, a position sensor for providing a signal representing a position of said needle valve, and a negative pressure motor for positioning said needle valve, comprising the steps of:

setting a target value for said needle valve according to predetermined operating conditions of said internal combusion engine;

measuring a positional deviation between said target value and an actual position of said needle valve as represented by said signal provided by said position sensor;

driving said negative pressure motor with only a single drive pulse having a time width corresponding to said measured positional deviation; and

prohibiting, after driving said negative pressure motor with one said drive pulse, for a predetermined period of time generation of a next subsequent drive pulse according to a newly measured positional deviation, said prohibiting being effective only after said negative pressure motor has been driven with a drive pulse.

4. An exhaust gas recirculation control apparatus for operating an exhaust gas recirculation control device including a needle valve provided in an exhaust gas recirculation passage for setting an effective diameter of said passage, a position sensor for providing a signal representing a position of said needle valve, and a negative pressure actuator for positioning said needle valve by a negative pressure, comprising:

means for setting a target value for said needle valve according to predetermined operating conditions of said internal combustion engine;

means for measuring a positional deviation between said target value and an actual position of said needle valve as represented by said signal provided by said position sensor;

means for driving said negative pressure actuator with only a single drive pulse having a time width corresponding to said measured positional deviation;

pause time setting means for prohibiting, after said negative pressure actuator has been driven with a single drive pulse, generation of a next subsequent drive pulse for a predetermined period of time, said generation of said next subsequent drive pulse corresponding to a subsequently measured positional deviation; and

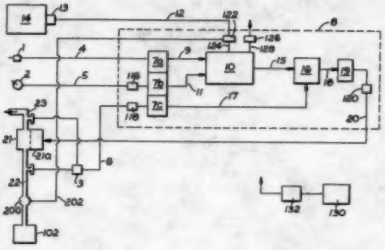
dead zone setting means for prohibiting, when the positional deviation between the target value and the actual position is less than a predetermined set value, generation of the drive pulse from said driving means.

4,641,625

FUEL CONTROL SYSTEM

Peter R. Smith, Nottingham, England, assignor to Industrial Trade Exchange, Inc., Savage, Minn.

Filed Apr. 19, 1985, Ser. No. 725,299
Claims priority, application United Kingdom, Oct. 10, 1984, 8425577
Int. Cl.⁴ F02B *13/00*
U.S. Cl. 123—575 **18 Claims**



1. A fuel control system for an internal combustion engine fueled by a gaseous and a liquid fuel, comprising

gaseous fuel flow rate control means including flow rate determination means responsive to engine load variables including a signal generated by a transducer indicating such variables,

said control means including valve means actuable to vary the gaseous fuel flow rate, said valve means being actuated responsive to the signal generated by the gaseous fuel flow rate determination means,

liquid fuel control rate determination means including injection pump control means controlling the flow rate of liquid fuel pumped into the engine,

a transducer responsive to pressure difference across said valve means generating a signal indicating the pressure difference,

said flow rate determination means including information storage means relating the pressure difference across said valve means, the desired gaseous fuel flow rate and the magnitude of the signal required by the valve means to provide the desired gaseous fuel flow rate,

a control algorithm in connection with said gaseous flow rate determination means and liquid fuel flow rate determination means determining the desired liquid and gaseous fuel flow rate,

a second information storage means containing information relating to engine speed, desired fuel flow rate and the magnitude of the signal required by the injection pump to produce the required liquid fuel flow rate,

said control algorithm responsive to any given engine speed derives from said second storage means the signal indicative of the liquid fuel flow rate which it feeds to said injection pump actuation means,

a third storage means containing information relating position of a liquid fuel governor and a desired gaseous fuel flow rate,

said control algorithm determining the desired gaseous fuel flow rate given the position of the liquid fuel governor using the third storage means which is influenced by at least one engine variable of speed and

including switch means for use of liquid fuel only and in the alternate permitting use of liquid and gas fuel.

4,641,626

ELECTRONIC IGNITION DEVICE FOR INTERVAL COMBUSTION ENGINES

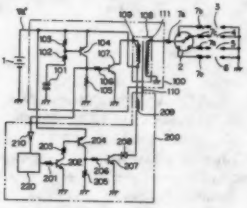
Seiji Morino, Okazaki; Eiichi Uno, Toyota, and Yoshihiro Yoshitani, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 25, 1985, Ser. No. 801,227

Claims priority, application Japan, Nov. 26, 1984, 59-249895; Jun. 24, 1985, 60-137151

Int. Cl.⁴ F02P *3/02*

U.S. Cl. 123—620 **12 Claims**



1. An electronic ignition device for an internal combustion engine comprising:

an ignition coil having a core and primary and secondary windings, both wound about said core;

first current interrupter means for alternately turning on and off current flow through said primary winding thereby inducing a high voltage across said secondary winding upon the interruption of the current flow through said primary winding;

an auxiliary winding, having less turns than said primary winding, wound about said core of said ignition coil and connected to said primary winding;

second primary interrupter means for completing a current flow path through said auxiliary winding for a certain period upon each interruption of current flowing through said primary winding, said current flow path causing magnetic flux to be generated through said core in a direction opposite to that of magnetic flux generated when said primary winding is energized; and

a diode, provided in said current flow path and connected in series with said second current interrupter means to prevent a reverse flow of current flowing through said auxiliary winding.

4,641,627

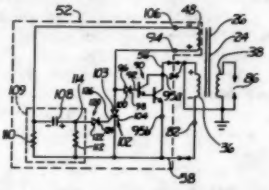
IGNITION MODULE

Donald R. Nash, Berkey, Ohio, assignor to Allied Corporation, Morris County, N.J.

Filed May 3, 1985, Ser. No. 730,226

Int. Cl.⁴ F02P *1/08, 3/12, 1/02*

U.S. Cl. 123—651 **8 Claims**



1. A retrofit ignition module for replacing mechanical breaker points of an ignition system comprising the mechanical breaker points, a generally U-shaped stator including a crossbar and two substantially parallel legs extending therefrom, an ignition coil wound about said crossbar including a primary winding and a secondary winding and a magnet for producing a variable flux field in said core, the module comprising a single drive winding adapted to be circumferentially received about one of said legs for generating an induced voltage signal in response to engine rotation, said module further comprising means for supporting said driving winding and a control circuit housed within said supporting means and positioned between a core leg and said ignition coil wherein said control circuit is responsive to said induced voltage signal and connected in circuit with said drive winding and said primary winding and operable to control the flow of current through said primary winding;

a first semiconductor switch including an input and an output connected in parallel across said primary circuit for providing, when conductive, a path in which primary current flows,

a second semiconductor switch, having an input, and an output connected to said input of said first switch for controlling the conductivity of said first switch, such that when said second switch is off said first switch is conductive or on, said second switch connected in circuit with one terminal of said drive winding,

the other terminal of said drive winding connected to said input of said second switch through a capacitor and diode, such that during intervals when said induced voltage at said one terminal is positive said second switch is rendered conductive thereby turning off said first switch to terminate current flow through said primary winding;

wherein a plurality of resistors are connected across said capacitor forming in combination with said capacitor a peak detector circuit.

4,641,628

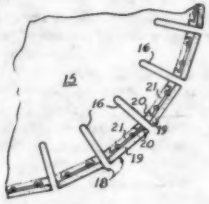
REMOVABLE MOUNT FOR CUTTING MEANS

Peter T. deKok, P.O. Box 33569, Decatur, Ga. 30033

Continuation-in-part of Ser. No. 455,214, Jan. 3, 1983, Pat. No. 4,517,954. This application May 16, 1985, Ser. No. 734,791

Int. Cl.⁴ B28D *1/04*

U.S. Cl. 125—15 **5 Claims**



1. In combination, a cutting machine having a movable periphery movable in at least one direction, and a plurality of cutting elements fixed to said movable periphery, said plurality of cutting elements constituting a cutting edge for said cutting machine, the width of said cutting elements determining the width of the kerf cut by said cutting machine, said cutting edge being movable with said movable periphery, each cutting element of said plurality of cutting elements including a base member fixed to said movable periphery, a cap member selectively receivable on said base member and having a width equal to the width of said base member, and a cutting segment fixed to said cap member and having a width equal to the width of said cap member, said base member having flat sides and diverging end surfaces, said diverging end surfaces diverging in the direction of motion of said cutting edge so that said base member has a dovetail configuration, said cap member includ-

ing hook members at each end thereof selectively engageable with said diverging end surfaces of said base member, said hook members including converging surfaces so that said cap member defines a dovetail opening therein for receiving said base member, the arrangement being such that said dovetail opening in said cap member can receive said dovetail configuration of said base member only with lateral motion of said cap member with respect to said direction of motion of said cutting edge, and securing means receivable between said cap member and said base member for engagng both said cap member and said base member for selectively preventing said lateral motion and retaining said cap member on said base member.

4,641,629

APPARATUS FOR COOKING AND/OR FOR HEATING OF AIR

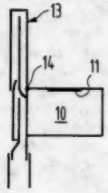
Fernand Muller, Ingeldorf; Nils A. Wannborg, Echternach, both of Luxembourg, and Kurt Billen, Roth, Fed. Rep. of Germany, assignors to Electrolux S.a.r.l., Vianden, Luxembourg

Filed Mar. 11, 1986, Ser. No. 838,736

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1985, 8507365[U]

Int. Cl.[4] F24C *1/14*

U.S. Cl. 126—6 **2 Claims**



2. Apparatus for cooking and/or heating of air, comprising a hearth having at least one hearth plate means, a cover, said cover including a chamber, said chamber being defined by an upper wall and a lower wall of said cover, a partition being provided between said upper wall and said lower wall for dividing said chamber into a first section and a second section, a passageway interconnecting said first section of said chamber with said second section of said chamber, an inlet in communication with said first section of said chamber and an outlet in communication with said second section of said chamber, said cover being hingedly mounted on said hearth in a manner to be juxtaposed in heat-conducting overlapping relationship to said hearth plate in juxta relationship whereby air conducted through said cover is heated as it flows through said second section of said chamber of said cover and the upper side of said cover is cooled by air flowing though said first section of said chamber of said cover.

4,641,630

APPARATUS FOR THE STEAM TREATMENT OF FOODS

Siegfried Meister, Siemensstrasse 2, 8910 Landsberg a. Lech, Fed. Rep. of Germany

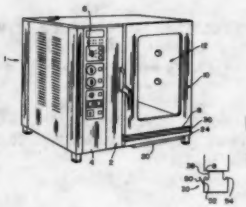
Filed Jul. 31, 1985, Ser. No. 760,879

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1984, 8422834[U]

Int. Cl.[4] A21B *1/08*

U.S. Cl. 126—20 **6 Claims**

1. An apparatus for the steam treatment of foods, which includes a cooking area, a steam supply line that issues into said cooking area, said apparatus defining an open front and having a hinged cooking area access door associated therewith, and a collecting trough for steam condensate disposed below the cooking area access door, characterized in that a door condensate channel (30) is carried on the lower ledge (8) of the door (10) and extends along the door width and which is adjacent the lower door hinge (32) and is provided with a drain opening (40) above the collecting trough (24) so that the channel pivots with the door about the hinge so as to collect condensate



dripping off the door and thereby prevent condensate from falling on a floor where the apparatus sits.

4,641,631

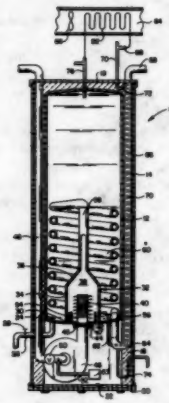
APPARATUS AND METHOD FOR BURNING A COMBUSTIBLE GAS, AND A HEAT EXCHANGER FOR USE IN THIS APPARATUS

Subhash C. Jatana, Upper Arlington, Ohio, assignor to Columbia Gas System Service Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 515,642, Jul. 20, 1983, Pat. No. 4,541,410. This application Sep. 9, 1985, Ser. No. 774,138

Int. Cl.[4] F24D *9/00*

U.S. Cl. 126—101 **19 Claims**



7. Apparatus for burning a combustible gas comprising;

a housing having walls defining a liquid chamber capable of holding liquid;

a combustion chamber member disposed within said liquid chamber and having liquid-impervious walls defining the combustion chamber;

an exhaust conduit having an inlet connected to said combustion chamber and an outlet through which combustion products can leave said apparatus;

a gas burner mounted within said combustion chamber, said burner having walls defining an internal chamber and apertures passing through said walls, thereby establishing fluid communication between said internal chamber of said gas burner and said combustion chamber outside said gas burner;

an impeller for passing a combustible mixture of said combustible gas and an oxygen-containing gas under pressure into said internal chamber of said gas burner,

said apertures in said gas burner being sized such that com-

bustion of said combustible mixture within said combustible chamber outside said gas burner will not cause ignition of said combustible mixture within said internal chamber of said gas burner,

a duct having an air inlet and an air outlet;

means for moving air through said duct from said air inlet to said air outlet;

a first heat exchanger disposed within said duct for effecting heat exchange between hot water passing through said heat exchanger and air passing through said duct around said heat exchanger, said heat exchanger having a water inlet and a water outlet;

a water supply conduit having an inlet disposed within said liquid chamber and an outlet connected to said water inlet of said heat exchanger;

a water return conduit having an inlet connected to said water outlet of said heat exchanger and an outlet disposed within said liquid chamber, said water return conduit having a section mounted in parallel to a section of said exhaust conduit and configured to cause the combustion products passing along said exhaust conduit and the water flowing along said water return conduit to flow countercurrent to one another and to cause heat to flow from said combustion products to said water; and

an outer housing surrounds said housing, at least part of said exhaust conduit is disposed between said housing and said outer housing, and part of said liquid return conduit is disposed within said exhaust conduit.

4,641,632

HEATING IRON USING LIQUEFIED GAS

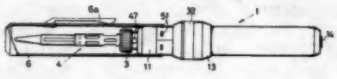
Masahiko Nakajima, Tokyo, Japan, assignor to Nakajima Dokosho Company Limited, Tokyo, Japan

Filed Jul. 25, 1985, Ser. No. 758,803

Claims priority, application Japan, Jul. 30, 1984, 59-159851

Int. Cl.[4] B23K *3/02*

U.S. Cl. 126—413 **5 Claims**



1. An iron for heating a workpiece comprising:

a nozzle for jetting out a combustible gas from a liquefied gas reservoir;

a gas mixture generating means at the exit of said nozzle for drawing air to mix with said combustible gas to form a mixture;

a catalyst combustion chamber downstream of said generating means having a gas flow channel extending therethrough with a catalyst layer deposited on the channel wall and a portion of the channel wall forming a pre-heating zone;

means for directly and flamelessly heating the outer side of said chamber to heat said pre-heating zone to ignite said mixture; and

a tip member at least partially surrounding the catalyst chamber for conducting the heat from said chamber to a workpiece.

4,641,633

ELECTRONIC SYSTEM FOR THE ACTIVATION, INHIBITION AND/OR MODIFICATION OF THE DEVELOPMENT AND FUNCTIONING OF CELLS, ORGANS AND ORGANISMS OF LIVING BEINGS

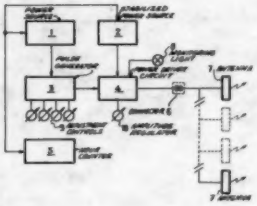
José M. R. Delgado, Caleruega 21, Madrid, Spain

Filed Apr. 25, 1985, Ser. No. 726,922

Claims priority, application Spain, Mar. 16, 1982, 510489

Int. Cl.[4] A61N *1/42*

U.S. Cl. 128—1.3 **21 Claims**



1. An electromagnetic system for non-invasive modification of living cells and organisms, comprising:

electronic generator means for generating very stable, unidirectional, symmetrical square waves, and including means for adjusting the timing of said square waves to provide very sharp square waves having rise times and fall times each of less than 0.1 microsecond; and

at least one antenna means for receiving said square waves and producing magnetic fields which can be applied to the living cells and organisms to modify their morphological and functional characteristics without disturbance of the cellular membrane protecting the cell and organism.

4,641,634

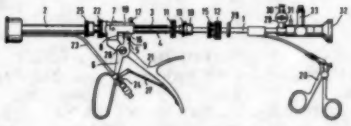
ONE-HAND HYSTEROSCOPE

Karl Storz, AVF Dem Schildrain 39, 7200 Tuttlingen, Fed. Rep. of Germany

Filed May 7, 1985, Ser. No. 731,649

Int. Cl.[4] A61B *1/00*

U.S. Cl. 128—4 **4 Claims**



1. A one-hand hysteroscope comprising: a sleeve bearing; an operating sleeve having an axis, and being axially movable in said sleeve bearing; a rigid forceps half rigidly mounted to said sleeve bearing; a pivoted forcep half pivotally mounted to said sleeve bearing; a plurality of notches arranged in axial sequence along the exterior of said operating sleeve; a pawl mounted to said rotatable forceps half, adapted to engage one of said notches and advance the operative sleeve in a forward direction when the forceps halves are moved toward one another, and to retract from the notches when they are moved apart from one another; and latch means mounted to said sleeve bearing and releasably engageable with said notches to restrain the operating sleeve from movement in the reverse direction unless released.

4,641,635

ENDOSCOPE APPARATUS

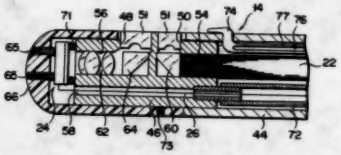
Hisao Yabe, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1985, Ser. No. 763,978

Claims priority, application Japan, Aug. 15, 1984, 59-170170; Aug. 15, 1984, 59-170173

Int. Cl.[4] A61B *1/04, 1/06*

U.S. Cl. 128—6 **11 Claims**



1. An endoscope apparatus comprising:

a control unit having a light source; and

an endoscope, said endoscope including

an operation section,

an elongated insertion section extending from the operation section and having an observation window and an illumination window provided at the distal end thereof, said observation window being positioned nearer the distal end than the illumination window,

a universal cord extending from the operation section and detachably connected to the control unit,

a light guide extending from the illumination window through the insertion section, operation section and universal cord for guiding light emitted from the light source and externally emitting the light from the illumination window,

an objective lens system arranged in the insertion section and optically connected to the observation window for forming an optical image of light incident thereon through the observation window, and

a solid-state image sensor arranged in the insertion section, positioned nearer the distal end of the insertion section than the end of the light guide at the illumination window side, and optically connected to the objective lens system for converting the optical image formed by the objective lens system to an electrical signal and transmitting the electrical signal to the control unit.

4,641,636

DEVICE FOR SUPPORTING THE RACHIS

Yves P. C. A. Cotrel, Villa Kerosen - Taden, 22100 Dinan, France

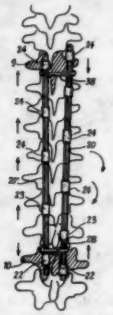
Filed Apr. 12, 1984, Ser. No. 599,558

Claims priority, application France, May 4, 1983, 83 07450

Int. Cl.[4] A61B *17/56*

U.S. Cl. 128—69 **12 Claims**

1. A device for strengthening the rachis comprising two pins which each extend over a plurality of vertebrae of said rachis, said pins being placed on opposite sides of said rachis, a plurality of hooked anchoring members mounted on each pin and positioned to rest on vertebrae of said rachis to support and derotate said vertabrae, and means to selectively fix said anchoring members in selected positions on said pins, said pins being of constant cross-section throughout their length and having roughened surfaces, each of said anchoring members being mounted for free, continuous motion along said pins except when fixed by said means to selectively fix, said means to selectively fix comprising a pressure screw perpendicular to said pins engageable with said roughened surface to fix said anchoring members in position on said pins, and said pins being



joined together by tractional cross-pieces fitted between said pins.

4,641,637

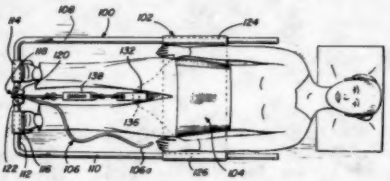
TRACTION DEVICE

Gerald M. Rosen, 2205 W. Woodbury La., Milwaukee, Wis. 53209

Continuation-in-part of Ser. No. 564,483, Dec. 21, 1983, abandoned. This application Jun. 20, 1985, Ser. No. 746,872

Int. Cl.[4] A61H *1/02*

U.S. Cl. 128—75 **6 Claims**



1. Spinal traction-applying apparatus for use on a support surface comprising a frame with parallel elongate side rails and a crossbar connecting the side rails, a seat-forming carriage for back and forth adjustment along the side rails toward and away from the crossbar, a cord grip on the crossbar, a lower body encompassing belt for a user, and a cord for extending from the belt through the cord grip so that a free end thereof may be grasped by the user wearing the belt and seated on the carriage with the user's feet on the crossbar, the cord grip having releasable gripping means for releasing the cord when the user pulls on the free end of the cord with the knees flexed to allow the user to apply minimum tension to the cord and for gripping the cord when the user lies back on the carriage and straightens the knees thereby increasing the tension in the cord and applying spinal traction to the user.

4,641,638

SEXUAL ERECTION PROTHESIS AND METHOD OF USE

Robert D. Perry, 16065 Perry Heights Dr., Riverside, Calif. 92504

Filed Oct. 10, 1985, Ser. No. 786,226

Int. Cl.[4] A61F *5/41*

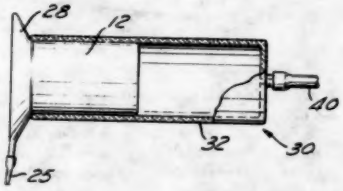
U.S. Cl. 128—79 **3 Claims**

1. A method of artifically enhancing the physiological condition of a male erection comprising the steps of:

positioning a tubular member over the penis of a user, said

tubular member having an expansible portion disposed within its interior; and

selectively admitting a pressurized fluid to said expansible portion to enlarge said expansible portion to contact the penis of a user in constrictive engagement sufficient to maintain the penis in an erect state; said pressurized fluid admitting step comprising manually pumping a quantity of pressurized fluid into a cavity formed within said tubular member, and said positioning step comprising the steps of



elongating the penis of the user to reduce the diameter of the penis; and reciprocating said tubular member along the length of the penis to abut the base of the penis; said elongating step comprising the steps of:

attaching a cup member to the end of the penis;

applying a vacuum to said cup member through an elongate conduit; and

manually pulling said conduit to moderately stretch the penis of the user.

4,641,639

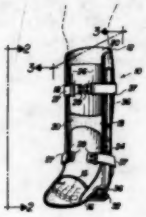
AMBULATORY BRACE ASSEMBLY

Rigoberto Padilla, 801 West 48 St., Hialeah, Fla. 33012

Filed Dec. 9, 1985, Ser. No. 806,867

Int. Cl.[4] A61F 5/04

U.S. Cl. 128—83.5 **18 Claims**



1. An ambulatory brace assembly of the type primarily designed to immobilize the foot of a patient and direct forces to which the brace assembly is subjected away form the heel during walking and like activities of the patient, said assembly comprising:

(a) a cast structure having an open front face and an at least partially hollow interior configured to receive and at least partially enclose a lower leg and foot of the patient,

(b) said cast comprising a substantially L-shaped configuration including a first portion thereof having a longitudinal dimension sufficient to extend from a calf portion of the leg to a location beneath a heel portion of the foot,

(c) said L-shaped configuration comprising a second portion extending outwardly from said first portion along at least a majority of the length of the received foot,

(d) said hollow interior further including an interior surface extending along the length of said first and said second portions and configured in substantial conformance to a correspondingly positioned exterior surface of the lower leg and foot received within said cast,

(e) a support assembly comprising a support platform disposed outwardly from an undersurface of said second portion, and two support legs each including correspondingly positioned distal ends fixedly secured to said support platform, said support legs extending outwardly from said support platform in spaced, substantially parallel relation to one another and each being fixedly secured to an opposite side of said cast, said support legs disposed and structured in cooperative relation to said support platform to bear the majority of the axial load of said cast when supporting the patient during walking or standing,

(f) said support platform mounted a first predetermined distance from one end and adjacent heel of said second portion and extending outwardly from said undersurface a second predetermined distance and into engagement with a supporting surface on which the patient is walking,

(g) said first predetermined distance being of sufficient dimension from the heel and one end of said second portion to position said support platform beneath the metatarsal region of the foot and direct forces away from the heel portion of the foot,

(h) said second predetermined distance being of sufficient dimension to maintain said one end of said second portion out of contact with the supporting surface during travel of said cast when the patient is walking,

(i) said undersurface of said second portion including an apertured construction disposed directly beneath the heel of the foot received within said cast and being of sufficient dimension to prevent forced engagement between the heel of the foot and any cast portion located in the vicinity immediately below the heel of the foot, and

(j) retaining means secured to said cast and extending across said open front face for maintaining the lower leg and foot of the patient within said hollow interior.

4,641,640

COMPRESSION SCREW ASSEMBLY

Calvin Griggs, 1455 Shady Birch, Memphis, Tenn. 38116

Division of Ser. No. 340,093, Jan. 18, 1982, Pat. No. 4,530,355.

This application Nov. 28, 1984, Ser. No. 675,934

Int. Cl.[4] A61F 5/04

U.S. Cl. 128—92 YV **4 Claims**

1. A lag screw for a compression screw assembly comprising:

an engaging means formed thereon for coacting with a second complementary engaging means formed on the interior surface of a hollow barrel member of a compression plate so that said lag screw is adapted to be received into the hollow barrel member in at least one fixed orientation, said engaging means and said second complementary engaging means being proportioned to accept therebetween a third complementary engaging means of a means for being optionally insertable into the barrel member in order to selectively prevent axial rotation of said lag screw with respect to the barrel member; and

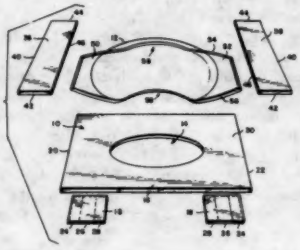
a means for coacting with a wrench assembly so that said lag screw can be releasably engaged by the wrench assembly in axial alignment therewith.

4,641,641

PROTECTIVE APPLIANCE FOR THE HIP JOINT AREA

Alvin E. Strock, 647 Commonwealth Ave., Newton Centre, Mass. 02159

Filed Sep. 13, 1985, Ser. No. 775,819
Int. Cl.[4] A61F *13/00*
U.S. Cl. 128—132 R 15 Claims



1. A protective appliance for the hip joint area comprising:
a pad made of a relatively resilient material adapted to be secured over the hip joint area of a wearer, and having inner and outer surfaces,
means for securing said pad so that its inner surface overlies the hip joint area of the wearer,
and a relatively rigid generally dome-shaped shield releasably secured to the outer surface of said pad so as to have portions spaced from the outer surface of said pad, said shield being adapted to disperse forces applied thereto, transferring such forces to portions of the shield contacting pad and surrounding the hip joint area.

4,641,642

PATIENT-ACTIVATED BODY IMMOBILIZER AND METHOD OF USE

Glenn A. Williams, Jr., 795 Carmel Ave. #3, Sunnyvale, Calif. 94086

Filed Jul. 19, 1984, Ser. No. 632,713
Int. Cl.[4] A61F *5/37*
U.S. Cl. 128—134 6 Claims

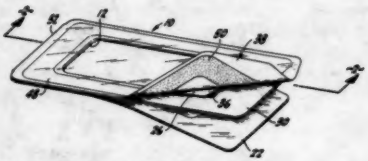
1. A method for a person to temporarily immobilize a selected region of that person's own upper body such as the chest and sternum against percussive expansion, comprising providing an inelastic circumferential normally open body strap having a closed length approximating the circumference of the nonexpanded selected region but shorter than the expanded body region and having a pair of closely spaced handles; suspending the body strap from the shoulders with the handles positioned at the front of the chest and the open strap loosely encircling the major portion of the circumference of the selected region; at the onset of coughing or sneezing, forcibly engaging the handles to move the handles together to tighten the strap about the selected region to prevent percussive expansion of the chest during the coughing or sneezing; and after the coughing or sneezing, releasing the gripping members.

4,641,643

RESEALING SKIN BANDAGE

Leland H. Greer, 530 E. 12th St., Oakland, Calif. 94606

Filed Apr. 28, 1986, Ser. No. 856,312
Int. Cl.[4] A61L *15/00*
U.S. Cl. 128—156 9 Claims



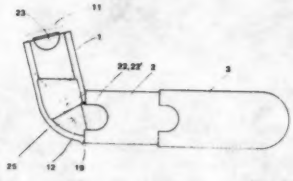
1. A resealing skin bandage comprising:
a. a flexible body having a first surface and a second opposite surface said flexible body including an opening therethrough from said first surface to said second surface;
b. means for removably fastening said flexible body first surface to the skin;
c. a flexible layer of water repellent material said flexible layer having an opening therethrough;
d. means for bonding said flexible layer to said second surface of said flexibility body, said opening through said flexible layer aligning with at least a portion of said opening through said flexible body;
e. A cover intended to overlay said at least partially aligned openings through said flexible body and said flexible layer; and
f. means for removably holding said cover to said flexible layer of water repellant material.

4,641,644

AEROSOL INHALATION DEVICE

Jan A. R. Andersson, S Sandby; Nils F. E. Morén, Malmö; Kjell I. L. Wetterlin, S Sandby, all of Sweden; Kaija A. Snellman Wasenius, Söderkulla, and Risto Virtanen, Nurmijärvi, both of Finland, assignors to Aktiebolaget Draco, Sweden

Continuation of Ser. No. 417,381, Sep. 13, 1982, abandoned. This application Sep. 5, 1985, Ser. No. 773,515
Claims priority, application Sweden, Sep. 15, 1981, 8105487
Int. Cl.[4] F11M *11/04*
U.S. Cl. 128—200.23 9 Claims



1. An aerosol inhalation device for administering a finely divided drug by inhalation, comprising
a socket having a substantially rectangular cross-section comprising two side walls, a top wall and a bottom wall, said walls defining a duct having a first open end adapted to receive an aerosol container of the drug and a second open end through which aerosol discharged from the container can exit and means adapted to receive a discharge valve of the aerosol container and direct the aerosol discharged thereby through said second open end;
an elongated deceleration chamber having a substantially rectangular cross-section and defining a duct, said chamber comprising an inner chamber portion and an outer chamber portion, each chamber portion including two side walls, a top wall, a bottom wall and opposite first and second open ends, said outer chamber portion having its

first open end telescopically displaceable over the second open end of said inner chamber portion between an extended position for dispensing aerosol doses, wherein the first open end of said outer chamber portion overlies the second open end of said inner chamber portion, and a collapsed position for storage of said device, wherein the first open end of said outer chamber portion overlies the first open end of said inner chamber portion, said deceleration chamber having a mouth piece at said second end of said outer chamber portion; and

means for operatively connecting the second open end of said socket and the first end of said inner chamber portion so that said chamber receives the aerosol discharged from the aerosol container, said operative connection means comprising;

a sectional arch defined by the portion of said socket adjacent said second open end, said arch formed by the side walls and the top wall adjacent said second open end extending beyond the plane perpendicular to the end of the bottom wall adjacent said second open end and curving toward the plane containing the bottom wall, and wherein the second open end of said socket is defined between the opening formed by the end of the top wall, the end of the bottom wall and the ends of the two side walls, said sectional arch being inserted into the first open end of said inner chamber portion with said top, side and bottom walls of said socket adjacent the respective ones of the inner chamber portion, said arch pivots about a pivot axis located substantially within the plane of the bottom wall of the socket and substantially within the plane of the bottom wall of the inner chamber portion to guide said socket through an angle to said deceleration chamber as said socket is moved to an extended position, wherein said socket extends out of said inner chamber portion, from a collapsed position, wherein said socket is contained within said inner chamber portion and back again; and

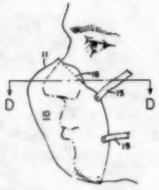
locking means on said socket and on said inner chamber portion for maintaining said socket and inner chamber portion at said angle when said socket is in its extended position.

4,641,645

FACE MASK

Amad Tayebi, Westford, Mass., assignor to New England Thermoplastics, Inc., Lawrence, Mass.

Filed Jul. 15, 1985, Ser. No. 754,955
Int. Cl.[4] A62B *7/00*
U.S. Cl. 128—206.19 **1 Claim**



1. A flexible face mask fabricated from a single sheet of fibrous material that offers relatively low resistance to the flow of air being filtered therethrough to conform the mask to the face of a wearer, and said mask has one or more elastic straps attached to the periphery of the mask to facilitate holding the mask against the face and prevent the passage of air between the mask and the face of the wearer particularly in the area of the nose, wherein said mask comprises:

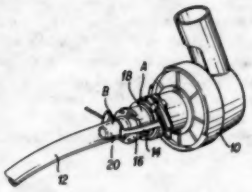
a cup shaped shell having a portion covering the nose of a wearer and a portion covering the mouth of the wearer, said nose covering portion having rearward extending projections adjacent its upper edge so that one projection is on either side of the lower portion of the nose of the wearer, said projections being formed when fabricating said mask by shaping said sheet material into an arcuate shape having substantially uniform material thickness with the fibers of said projections being more densely compacted than the rest of said nose covering portion to provide structural strength giving shape retention, said projections extend rearward from said face mask and protrude exterior from the interior of said mask beyond a plane in which the peripheral edge of said mask normally lies when said mask is not worn, and said projections lie against the face on either side of the nose when the mask is worn to thereby conform the shape of the nose portion of said mask to the contour of the face of the wearer about the nose and on either side of the lower portion of the wearer's nose so that when said mask is worn said projections do not pinch the sides of the lower portion of the wearer's nose so as to interfere with breathing, yet the straps holding the mask to the face accomplish an air seal around the periphery of the mask without having to substantially deform the mask or the face of the wearer in order to accomplish the seal.

4,641,646

ENDOTRACHEAL TUBE/RESPIRATOR TUBING CONNECTING LOCK MECHANISM AND METHOD OF USING SAME

Kenneth E. Schultz, Dauphin, Pa., and William R. Evans, Mooresville, N.C., assignors to Kenneth E. Schultz, Camp Hill, Pa.

Filed Apr. 5, 1985, Ser. No. 720,310
Int. Cl.[4] A61M *16/00*; **F16L** *35/00*
U.S. Cl. 128—207.14 **19 Claims**



1. A connecting lock mechanism for locking an endotracheal tube to a respirator connector, comprising:

belt means having opposite ends and adapted to surround one of an endotracheal tube and a respirator connector and including latch means for attaching said opposite ends together in a quickly releasable manner and thereby secure said belt means around said one of an endotracheal tube and a respirator connector in a tightenable manner;

adjustable collar means for surrounding the other of the endotracheal tube and the respirator connector in a tightenable manner;

interconnection means substantially lateral to and interconnecting the belt means and the collar means;

wherein said latch means comprises notches on one end of the belt means and a notch engaging and holding lever on the other end of the belt means.

4,641,647

DEVICE FOR SECURING RESPIRATORY APPLIANCE DURING RESPIRATORY THERAPY

Diane E. Behan, Greenbelt, Md., assignor to Sheryl L. Taylor, Seabrook, Md., a part interest

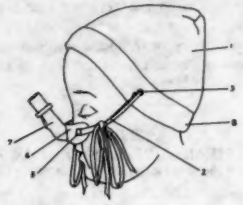
Filed Feb. 8, 1985, Ser. No. 699,927
Int. Cl.[4] A61M *15/08*
U.S. Cl. 128—207.18 **6 Claims**

1. A device for securing a nasally inserted respiratory appliance within the nares of a patient during respiratory therapy,

the respiratory appliance defining securement openings, said device comprising

a head covering formed substantially of resilient material and adapted to expand and contract to conform to different sized and shaped heads of various patients, retain that shape for the duration of the therapy and cover the entire head of the patient from the forehead to the base of the neck; and

means for connecting said head covering to the respiratory appliance, said connecting means comprising at least two elongated members adapted for connecting the respiratory appliance to said head covering, one of the free-ends of each of said elongated members being adapted for insertion through one of the openings of the respiratory



appliance, respectively, and adapted to be connected to its other free-end, said elongated members being attached to said head covering at opposite points thereon, respectively, which are adapted to approximately correspond to the temporal areas of the patient's head,

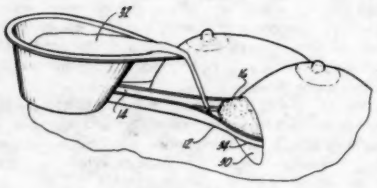
said elongated members having means for adjusting the distance between the respiratory appliance and said head covering means so that the respiratory appliance is securely positioned within the nares of the patient, whereby when said head covering and said elongated members are positioned on the head of the patient and secured to the respiratory appliance the stress from the secured respiratory appliance is evenly distributed over the entire area of the patient's head.

4,641,648

SURGICAL INSTRUMENT

Marshall Shapiro, 7180 Pebblecreek, West Bloomfield, Mich. 48033

Filed Sep. 27, 1985, Ser. No. 781,028
Int. Cl.[4] A61F *1/24;* A61B *17/00*
U.S. Cl. 128—303 R **1 Claim**



1. A method of inserting a prosthetic breast implant into a body cavity, which comprises:

(A) guiding the prosthetic implant into the body cavity with a substantially spoon-shaped surgical instrument having an elongate, trough-shaped handle opening into a wider, concave implant-holding spoon portion wherein the implant is placed in said spoon portion;

(B) applying normal saline solution through the handle of the surgical instrument to reduce the frictional forces between the implant, the surgical instrument and human tissue;

(C) replacement and positioning of the implant within the body cavity using the surgical instrument; and

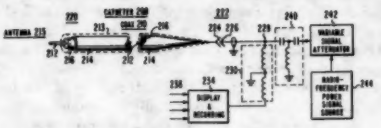
(D) withdrawing the surgical instrument from the body cavity while leaving the prosthetic implant within the body cavity.

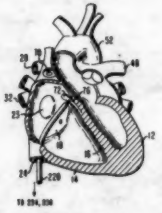
4,641,649

METHOD AND APPARATUS FOR HIGH FREQUENCY CATHETER ABLATION

Paul Walinsky, Philadelphia, Pa.; Arye Rosen, Cherry Hill, N.J., and Arnold J. Greenspon, Jenkintown, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 30, 1985, Ser. No. 792,895
Int. Cl.[4] A61N *1/32*
U.S. Cl. 128—303.1 **6 Claims**





1. A method for medical treatment, comprising the steps of:

introducing into a chamber of the heart one end of a coaxial transmission line which includes a center conductor coaxial with an outer conductor, said one end of said coaxial transmission line including an antenna coupled to said center conductor, said antenna including an uninsulated protruding tip;

adjusting the position of said one end of said protruding tip of said antenna contacts a wall of said coaxial transmission line in such a fashion that said chamber for coupling to said antenna action potentials related to the operation of the heart;

coupling to the other end of said coaxial transmission line a means for displaying said action potentials;

displaying said action potentials;

further adjusting the position of said one end of said coaxial transmission line so as to be contiguous with that point on said wall with a desired action potential;

continuously applying high frequency electromagnetic energy to said other end of said coaxial transmission line during a period of time;

observing action potentials related to operation of said heart at least during said period of time;

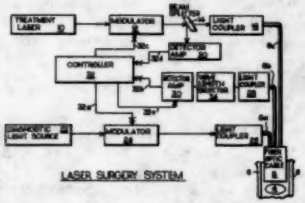
monotonically increasing the power of said electromagnetic energy during said period of time; and

ceasing said increasing and terminating said period of time when said action potentials are reduced.

4,641,650
PROBE-AND-FIRE LASERS

Walter Y. W. Mok, Palo Alto, Calif., assignor to MCM Laboratories, Inc., Mountain View, Calif.

Filed Mar. 11, 1985, Ser. No. 710,431
Int. Cl.[4] A61B *17/35*
U.S. Cl. 128—303.1 8 Claims



LASER SURGERY SYSTEM

1. A surgical laser system for operating on a treatment site comprising:

a fiber optical means having a proximal end and a distal end positionable in operative proximity to the treatment site;

a treatment laser source optically connected to the proximal end of said fiber optical means;

a diagnostic radiation source connected to the proximal end of said fiber optical means for irradiating the treatment site;

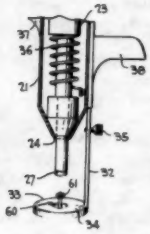
a responding radiation detector means connected to the proximal end of said fiber optical means for generating a control signal when detecting a particular radiation in response to being irradiated by said diagnostic radiation source from the treatment site; and

means for controlling said treatment laser source to operate only when said radiation detector means emits said control signal.

4,641,651
CARTILAGE PUNCH AND MODIFIED PROSTHESIS IN TYMPANOPLASTY

George W. Card, P.O. Box 808, Goodlettsville, Tenn. 37072

Filed Sep. 22, 1983, Ser. No. 534,719
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—305 12 Claims



1. A cartilage punch for excising a cartilage plug of uniform thickness from a cartilage mass in vivo

in combination with a prosthetic device, comprising:

a housing member having an elongated passage therein and a cutting opening at one end thereof, said elongated passage terminating at said cutting opening;

a prosthetic device having a surface adapted to have a cartilage plug secured thereto;

a cutting plunger secured in said housing member for longitudinally reciprocating movement in said elongated passage, said cutting plunger having an annular cutting end disposed to be selectively projected out through said cutting opening end including a hollow interior communicating with said cutting end;

an anvil means fixed to said housing member and including a stage surface oriented generally perpendicularly to a direction corresponding to said longitudinal reciprocating movement of said cutting plunger, said anvil means further comprising an extension means for selectively adjustably translating said stage surface in a direction generally parallel to said direction to selectively increase and decrease spacing between said stage surface and said cutting opening to thereby permit insertion and removal of said cartilage mass in said spacing;

a means for selectively forcefully translating said cutting plunger toward said cutting opening to force said annular cutting end through said cutting opening and toward said stage surface through the cartilage mass disposed on said space;

whereby a plug of cartilage is cut by said cutting end and substantially completely forced into said hollow interior portion of said cutting plunger by the forceful translation of said cutting plunger toward said stage surface wherein a thickness dimension of the plug conforms to an interior dimension of said hollow interior portion taken in a direction generally transverse to said longitudinally reciprocating movement;

said stage surface being recessed in a predetermined configuration to stably receive said prosthetic device with said surface of said prosthetic device facing said cutting opening, whereby said plunger can be selectively extended from said elongated passage to bring said surface of said prosthetic device into contact with the cartilage plug disposed in the hollow interior of said cutting plunger;

said prosthetic device including an attachment means disposed at said surface of said prosthetic device for mechanically engaging the cartilage plug.

4,641,652
APPLICATOR FOR TYING SEWING THREADS

Frieder Hutterer, Cologne; Gerd Buess, Pulheim, and Manfred Boebel, Oetisheim, all of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Apr. 10, 1985, Ser. No. 721,669
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1984, 3413744
Int. Cl.[4] A61B *17/04;* D05B *1/00, 87/00;* D03J *3/00*
U.S. Cl. 128—334 R 14 Claims

1. An applicator for tying threads for stitching wounds with single stitches comprising:

a shaft with proximal and distal ends having a longitudinal duct therethrough for a thread, said shaft having a radial opening adjacent the distal end to provide access to said duct;

means at the proximal end of said shaft for securing a thread passing through said duct;

a hollow open-ended helical tube extending from the distal end of said shaft with an inside of said tube communicating with a distal portion of said duct to enable said thread to pass through said helical tube, and

an auxiliary device in the form of a rod insertable through said duct in said shaft, said rod having a flexible loop at one end thereof for attachment to a thread to enable said thread to be drawn through said duct from said radial opening to said securing means at the proximal end of said shaft.

4,641,653

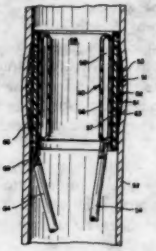
MEDICAL SLEEVE

Arthur G. Rockey, 3438 Sharon Rd., Charlotte, N.C. 28211

Continuation-in-part of Ser. No. 216,989, Dec. 16, 1980, Pat. No. 4,501,264, which is a continuation of Ser. No. 912,010, Jun. 2, 1978, abandoned. This application Feb. 19, 1985, Ser. No. 702,828

Int. Cl.[4] A61M *29/02*

U.S. Cl. 128—344 **2 Claims**



1. A method of treating an area of a body vessel, comprising the steps of:

introducing a catheter with a collapsed inflatable annular balloon and a collapsed sleeve encircling the balloon on its end into the vessel at a point remote from the area to be treated;

manipulating the catheter axially along the vessel to cause the balloon and sleeve to enter the area to be treated;

inflating the balloon by introducing fluid under pressure into the balloon through a tube of the catheter in a manner wherein the sleeve surrounding the balloon is radially expanded towards the wall of the vessel;

providing in the sleeve a material which increases in rigidity after expansion of said balloon;

maintaining said balloon in an expanded condition in the vessel while said sleeve increases in rigidity and body fluid is allowed to pass through the central aperture of the balloon; and

thereafter removing the balloon and catheter from the vessel and allowing the sleeve to remain in place in the area to be treated.

4,641,654

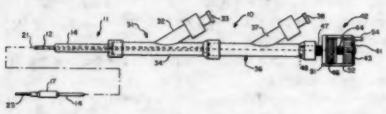
STEERABLE BALLOON DILATATION CATHETER ASSEMBLY HAVING DYE INJECTION AND PRESSURE MEASUREMENT CAPABILITIES

Wilfred J. Samson, Saratoga, and Jeffrey S. Frisbie, San Jose, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.

Filed Jul. 30, 1985, Ser. No. 760,722

Int. Cl.[4] A61M *29/02*

U.S. Cl. 128—344 **15 Claims**



1. In a steerable balloon dilatation catheter assembly having dye injection and pressure measurement capabilities, an elongate flexible tubular member having first and second lumens extending longitudinally thereof a balloon carried by the distal portion of the tubular member and having its interior in communication with the second lumen, the first lumen extending through the balloon and being open at its distal extremity a guide wire extending through the first lumen and having a coil carried by the distal portion thereof and extending beyond the distal extremity of the tubular member, means coupled to the guide wire facilitating at least limited rotation of the distal extremity of the guide wire, means coupled to the guide wire limiting inward and outward movement of the guide wire in a direction longitudinal of the axis of rotation of the guide wire, a first fitting coupled to the second lumen and adapted to receive a liquid for inflating and deflating the balloon and a second fitting in communication with the first lumen, said first lumen and said guide wire being sized so that dye injections and/or pressure measurements can be made through the second fitting.

4,641,655

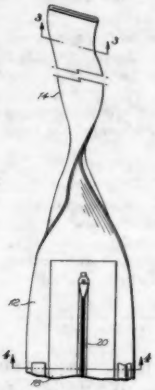
THERAPEUTIC COOLING WRAP

Nancy G. Abt, 9397 Midnight Pass Rd., Apt. 404S, Sarasota, Fla. 34242

Filed Aug. 2, 1985, Ser. No. 761,882

Int. Cl.[4] A61F *7/02*

U.S. Cl. 128—380 **10 Claims**



1. A cooling wrap comprising:

an elongated strip of water pervious fabric forming a central pouch section with tying straps at both ends;

said pouch section being formed by a single fold of the sides of said strip of fabric and said tying straps being formed by stitching said single folds together;

an elongated bag formed of water pervious fabric secured in said pouch section;

said bag having an open-pored foam liner along at least one side; and

closure means for said bag, whereby said cooling wrap may be tied around a portion of the body and a frozen water medium placed in said bag will have body heat transferred thereto resulting in a controlled dispensing of water through said foam liner and fabric to said body portion.

4,641,656

CARDIOVERSION AND DEFIBRILLATION LEAD METHOD

Karel F. A. A. Smits, Oirsbeek, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 20, 1985, Ser. No. 746,694

Int. Cl.[4] A61N *1/36*

U.S. Cl. 128—419 D **19 Claims**

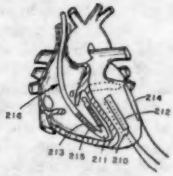
1. A method of applying electrical energy to a human heart, comprising:

applying at least first, second and third electrodes to said human heart, said first, second and third electrodes,

spaced from one another, mounted around said human heart at the level of the ventricles of said human heart, such that said first electrode is adjacent said second electrode and said second electrode is adjacent said third electrode;

applying a first electrical pulse to said at least first, second and third electrodes such that said first and second electrodes are at a first polarity during said electrical pulse, while said third electrode is at a second polarity during said electrical pulse; and

subsequently applying a second electrical pulse to at least said first, second and third electrodes such that said second and third electrodes are at said first polarity during said second electrical pulse and said first electrode is at said second polarity during said second electrical pulse.

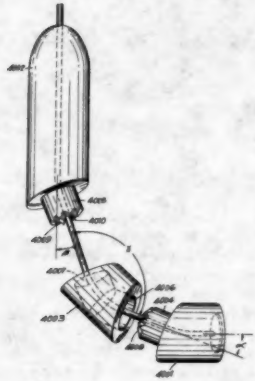


4,641,657

PROBE SWIVEL MECHANISM

Donald G. Ellis, Boulder, Colo., assignor to University Patents, Inc., Westport, Conn.

Filed Feb. 8, 1985, Ser. No. 699,677
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—630 **6 Claims**



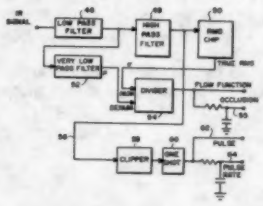
6. In a probe including an elongated body adapted to receive a transducer at one end having a central bore for leading conductor means from said transducer through the other end thereof, the improvement wherein said body comprises first and second end members and a central member, said end members having bevel gears directed toward and engaging one another, with the axis of at least one bevel gear being non-parallel to the axis of the respective end member, said central member being rotatably mounted to each of said end members surrounding said gears for inhibiting relative separation of said gears, and adjusting the relative angle of said end members.

4,641,658

CARDIAC FLOW MONITOR

James M. Lepper, Riverside, Calif., assignor to American Hospital Supply Corp., Evanston, Ill.

Filed Oct. 1, 1984, Ser. No. 656,515
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—633 **15 Claims**



1. The method of deriving blood flow information from a single color signal produced by a fiberoptic cardiac catheter, comprising the steps of:

(a) filtering said signal to obtain its AC and DC components;

(b) determining the RMS value of said AC component; and

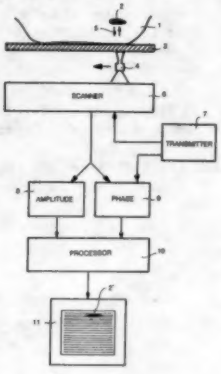
(c) dividing said RMS value by the value of said DC component.

4,641,659

MEDICAL DIAGNOSTIC MICROWAVE SCANNING APPARATUS

Raimo E. Sepponen, Pitkansillanranta 7-9 C 111, 00530 Helsinki 53, Finland

Continuation-in-part of Ser. No. 154,593, May 29, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,804
Claims priority, application Finland, Jun. 1, 1979, 791771
Int. Cl.[4] A61B *5/05*
U.S. Cl. 128—653 **5 Claims**



4. Apparatus for diagnosing pathological disorder of a patient and having a microwave transmitting means (7) and a microwave antenna means (4) for directing a microwave signal to the patient under examination, receiver means for detecting signals from the patient under examination, the improvement comprising a scanning mechanism (6) connected to move said antenna means (4) and thereby scan the patient under examina-

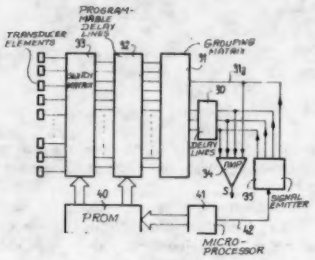
tion, and a matching plate (3) adapted to be interposed between the antenna means and the patient, said plate (3) being a solid plate having a dielectric constant substantially the same as that of patient tissue, said antenna means (4) being disposed on one side of said matching plate (3) to sweep over the surface thereof at least substantially in continuous contact and the patient (1) under examination being pressable against the other side of said plate (3).

4,641,660

ECHOGRAPHY PROBE AND APPARATUS INCORPORATING SUCH A PROBE

Robert Bele, Chessy, France, assignor to CGR Ultrasonic, Meaux, France

Filed Oct. 15, 1984, Ser. No. 660,997
Claims priority, application France, Oct. 18, 1983, 83 16550
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **13 Claims**



1. An ultrasonic echography apparatus comprising:

a fixed transducer probe, the probe including:

transducer means for defining a convex coupling surface, said transducer means including a mosaic of transducer elements,

switching means for selectively grouping a first set of transducer elements in said mosaic of transducer elements to form a configuration approximately defining concentric rings, the switching means further selectively grouping different sets of transducer elements in the mosaic, thereby effecting the moving of the configuration in an alternating sweep manner; and

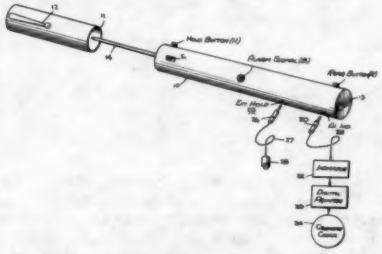
first means for applying a first delay law to each ring of the concentric rings for compensating the different propagation times for energies emitted from each ring of the concentric rings.

4,641,661

ELECTRONIC ALGESIMETER

Mathew S. Kalarickal, Kalarickal-Kottayam, Kerala, India 686018

Filed Aug. 2, 1985, Ser. No. 761,790
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—744 **17 Claims**



1. An algesimeter for determining by cutaneous sensation the pain threshold of a patient being tested, said meter comprising:

A. a hand-held pressure transducer provided with a sensor constituted by a pointed probe whereby when the point of the probe is pressed against the skin of a patient at a selected site and is shifted from an initial position to a position displaced therefrom that depends on applied pressure, the transducer then yields a signal whose magnitude is a function of the applied pressure, and bias means to maintain said probe at said initial position in the absence of the applied pressure;

B. means including a resettable electronic pressure indicator responsive to said signal and provided with a display whose reading indicates the magnitude of the signal and hence the degree of applied pressure, said means including an actuatable circuit to hold said reading and a switching device to reset said indicator; and

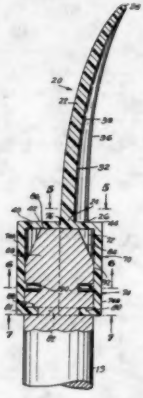
C. a manually-operated electrical switch connected to said hold circuit which when actuated renders the circuit effective to hold the reading then being given so that by actuating the switch at the instant the patient who is subjected to the pressure senses pain, the pain threshold value thereof is retained so that it can be read when the probe is withdrawn from the skin, after which the switching device may be operated to reset the indicator.

4,641,662

ENDOCERVICAL CURETTE SYSTEM

John R. Jaicks, 945 Morris Park Ave., Bronx, N.Y. 10462

Filed Sep. 28, 1984, Ser. No. 655,378
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—757 **12 Claims**



1. A curette system for scraping a patient in an endocervical curettage (EEC) procedure, comprising, in combination,

an elongated handle member having a gripping end and an opposed mounting end, and

curette means removably connected to said mounting end of said handle member, said curette means being for scraping and holding tissue and mucous from the surface of said endocervix up to the area of the internal os and not the area beyond the internal os, said curette means including a disposable curette member with an elongated wall having a curved base end like wall of about 140° arc, a tip portion, and a pair of mating inwardly tapered edges extending between said curved base and tip portion, said elongated wall having an inner surface defining a hollow between said tapered edges,

serration means at said tapered edges of said curette member being for moving smoothly over the surface of the endocervix when the curette member is moved into the cervix, for holding mucous and tissue when said curette member is firmly scraped outwardly along the endocervix, and for retaining tissue and mucous when the curette member is

removed from the endocervix, said serration means being spaced slightly inwardly toward said hollow and away from said tapered edges and comprising a plurality of serations,

said plurality of serrations having a first flat surface transverse to said inner surfaces of said elongated wall said first flat surface having an inner edge coextensive with said elongated wall and an opposed outer edge, said inner and outer edges being generally transverse to said tapered edges, each of said plurality of serrations further including a second flat surface angled both toward said elongated wall and said tip portion, and a second flat surface having a top edge coextensive with said inner edge of said first flat surface and a lower edge coextensive with said outer edge of said first flat surface, and locking means for holding said curette means to said mounting end of said handle member,

whereby said serration means is capable of gathering and retaining tissue and mucous scraped and pulled from over a wide area defined by said tapered curette member from the surface of the endocervix and the internal os as said curette member is removed from the endocervix by a drawing motion while firmly scraping outwardly along the endocervix in a non-rotatable movement, so as to in about a minimum of three passes using like, but separate and disposable curette members with an overlap on either side of a previous curretage cover the entire circumferential area of said endocervix, and whereby each disposable curette member being for analysis without any further handling.

4,641,663

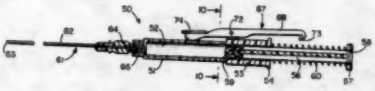
APPARATUS FOR COLLECTING SPECIMENS

Steven K. Juhn, 2624 Rice Creek Ter., New Brighton, Minn. 55112

Filed May 17, 1985, Ser. No. 735,098

Int. Cl.[4] A61M *5/20*

U.S. Cl. 128—765 **13 Claims**



1. An apparatus for collecting fluid comprising: a tubular body having a chamber for holding fluid, elongated tube means connected to the body, said tube means having an open end and a passage from the open end to the chamber, piston means located in said chamber, a plunger connected to the piston means for moving the piston means in the chamber, biasing means located in engagement with the plunger and body for biasing the plunger and piston means to a first position, releasable latch means mounted on the body engageable with the plunger to hold the plunger and piston means in second position, said latch means being movable to disengage the plunger whereby the biasing means moves the plunger and piston means from the second position to the first position drawing fluid adjacent the open end of the tube means through the tube means into the chamber.

4,641,664

ENDOCARDIAL ELECTRODE ARRANGEMENT

Lars Botvidsson, Juerfaella, Sweden, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

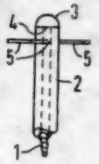
Filed Apr. 15, 1985, Ser. No. 723,081

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3414072

Int. Cl.[4] A61N *1/04*

U.S. Cl. 128—785 **14 Claims**

1. An endocardial electrode arrangement for intracardial stimulation of the heart comprising a conductor assembly having an axially elongated electrical conductor and a covering of electrical insulation and an electrode head electrically connected to a distal end of the electrical conductor for supplying stimulation pulses to the heart; and emplacement means secured to the conductor assembly in the vicinity of the distal end for fixing the conductor assembly to a cardiac wall, said emplacement means having at least one filamentary element of soft flexible material at least partially surrounding said conductor assembly spaced from said insulation end extending from the conductor assembly in a plane perpendicular to the elevated axis of the conductor assembly for fixing the conductor assembly to a cardiac wall, said filamentary element having a length so as to be safely deflectable by a wall of a blood vessel to a position closely adjacent the insulation of the conductor assembly during passage through a vein.



4,641,665

EXPANSION OF TOBACCO

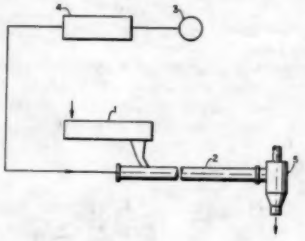
Roger W. Hedge, Lymington, and Ian C. Brown, Winchester, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Jun. 14, 1985, Ser. No. 744,806

Claims priority, application United Kingdom, Jun. 23, 1984, 8416084

Int. Cl.[4] A24B *3/18*

U.S. Cl. 131—296 **19 Claims**



1. A tobacco expansion process, which comprises;

treating the tobacco with an expansion agent which comprises a two component mixture, said agent comprising as a first component a first organic compound which is volatile, non-polar and substantially water insoluble, and as a second component a second organic compound which is volatile, water soluble, oxygen containing and of a polarity in excess of that of said first compound; and

subjecting the treated tobacco to heating and/or a reduction in pressure; whereby the filling power increase is greater than the increase expected on a linearly proportional basis from the increases for each of the components of said agent.

4,641,666

SMOKE FILTERING MATERIAL

Harold O'Connell, Sr., 596 Newtown St., South Hadley, Mass. 01075

Filed Jan. 13, 1986, Ser. No. 818,006
Int. Cl.[4] A24D *3/08*
U.S. Cl. 131—341 **29 Claims**

12. A smoke filtering composition comprised of the flower portion of a red-fruited sumac tree which has been processed in accordance with the steps comprising:
- separating the sumac fruit from the sumac cluster;
- boiling the fruit in a liquid;
- separating the boiled fruit from the liquid;
- drying the fruit;
- heating the fruit whereby it becomes a charcoal-like substance; and
- combining said charcoal-like sumac fruit with fibrous filter material.

21. A smoke filtering composition comprised of the flower portion of a red-fruited sumac tree which has been processed in accordance with the steps comprising:
- separating the sumac fruit from the sumac cluster;
- boiling the fruit in a liquid;
- separating the boiled fruit from the liquid;
- saturating fibrous filter material with the boiled liquid; and
- drying the saturated filter.

4,641,667

PROCESS OF PREPARING NICOTINE N'-OXIDE AND SMOKING PRODUCTS CONTAINING IT

Gerald Schmekel, Elmshorn, and Gert Rudolph, Hamburg, both of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,573
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344554
Int. Cl.[4] A24B *15/38*; C07D *401/04*
U.S. Cl. 131—352 **27 Claims**

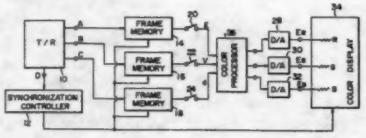
1. A smoking product comprising tobacco and a quantity of up to 5% by weight relative to the dry weight of the smoking product of nicotine N'-oxide, said nicotine N'-oxide consisting of at least 90% of the trans-isomer and at most 10% of the cis-isomer of nicotine N'-oxide.

4,641,668

ULTRASONIC BLOOD FLOW IMAGING METHOD AND APPARATUS

Koroku Namekawa, Mitaka, Japan, assignor to Aloka Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 516,792, Jul. 25, 1983, abandoned. This application Aug. 19, 1985, Ser. No. 767,148
Claims priority, application Japan, Jul. 28, 1982, 57-130503
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—663 **3 Claims**



3. An ultrasonic imaging apparatus for imaging blood flow and tomographic signals comprising an ultrasonic transmitter/-receiver means for outputting a tomographic image signal produced by sending an ultrasonic beam into a specific region of a body under examination and electrically detecting the reflected echo from said region, and including pulse doppler means for selectively detecting a signal representative of a first function of the spatial velocity distribution of blood flow and a second signal representative of a second function of spatial velocity distribution of blood flow and of a deviation from said first function, said signals corresponding to the velocity of movement of blood flow within said region; a plurality of frame memory means coupled to said transmitter/receiver for storing each of said signals; a color processor means coupled to said frame memory means for producing a color video signal from said signals stored in said frame memory means; and a color display means responsive to said color video signal from said color processor means for displaying a tomographic image of said region in white, for displaying the direction of said first function within said region in one color when positive and in another different color when negative, and for displaying the magnitude of said first function by varying the brightness of the color displayed, and further for displaying said tomographic image and said first and second functions superposed one on the other, said color processor means further comprising means for mixing at least one further color with the color displayed depending on the magnitude of said second function.

4,641,669

METHOD FOR REINFORCING AND HARDENING HUMAN NAILS

Lorraine Kimble, P.O. Box 32, 8962 E. Hampden Ave., Denver, Colo. 80231

Filed Apr. 19, 1985, Ser. No. 724,930
Int. Cl.[4] A45D *29/00*
U.S. Cl. 132—73 **11 Claims**

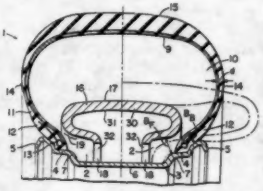
1. Method for reinforcing human nails comprising the steps of:
- a. cutting from a thin mat of natural cellulose fibers a patch of said mat that generally conforms to the shape of the nail and placing said patch on the surface of the nail;
- b. applying a coat of a bonding composition to said patch sufficient to permeate the patch and bond intersecting fibers to one another and to the nail surface;
- c. allowing said bonding composition to dry;
- d. repeating steps a. and b. for a plurality of times; and
- e. shaping and smoothing the resulting bonded fiber coat.

4,641,670

VEHICLE WHEEL FOR A PNEUMATIC TIRE

Dionysius J. Poque, and Norbert Zinnen, both of Aachen, Fed. Rep. of Germany, assignors to Uniroyal Englebert Reifen GmbH, Aachen, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,571
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1983, 3341969
Int. Cl.[4] B60C *17/04, 17/10*; B60B *21/10*
U.S. Cl. 152—158 **4 Claims**



1. In a vehicle wheel having a one-piece rim on which can be mounted a pneumatic tire which has a tread strip, two sidewalls, a carcass, and two tire beads which are laterally spaced from one another and contain substantially inextensible bead cores; said wheel rim having a radially recessed rim base, and including a rim drop well as well as respective axially outwardly extending rim shoulders, each of which ends in a respective rim flange; an emergency operation support member being disposed in said rim base and having a supporting surface which faces radially outwardly, being located radially outwardly of said rim flanges, and having a width which corresponds approximately to the width of said rim base;

the improvement in combination therewith which comprises: means for preventing the tire bead from being released from the one piece rim along with means for accommodating the tire bead during emergency operation, without adversely affecting, rather fully maintaining, the mounting of the tire by means of a rim drop well and the advantageous support of the tire during emergency running operation including a respective radially inner annular lateral guide surface to permit tire mounting with said rim drop well provided with said emergency operation support member including a very wide annular emergency-running support surface and across from at least one of said rim shoulders, said respective radially inner annular laterally guide surface facing said rim shoulder being spaced therefrom by a narrow constricted distance which corresponds at least to the thickness of one of said tire beads and serves as said means for preventing the tire bead from being released from the one-piece rim; respective annular chambers being provided axially inwardly of said radially inner annular laterally guide surfaces, and extending to said rim base, said chambers serving as said means for accommodating the tire bead during emergency running operation, without adversely affecting, rather fully maintaining the mounting of the tire via rim drop well and the advantageous very wide annular emergency-running support surface for the tire during emergency running operation; said radially inner surface being provided at a selectively predetermined position on the radially inner contour of said emergency operation support member, said position being a point on a curve which initially extends essentially parallel to an imaginary line extending between the axially inner edge of one of said rim shoulders and the associated rim flange, and which radially outwardly thereof extends approximately parallel to an imaginary line which conforms to the outer contour to a mounted tire; a respective radially inner support member surface and annular chamber in the vicinity of each of said rim shoulders; said distance between said radially inner surface and said rim shoulder being in a range of from 1.1 to 3 times said thickness of said tire bead; the depth of said annular chamber being in a range of 0.3 to 1.0 times the height of the drop well of a standard rim, measured from a line which is parallel to the central axis of said wheel and defines said rim shoulder; said recessed rim base and said emergency operation support member being symmetrically arranged as well as the width of said supporting surface of said emergency operation support member being in a range of 0.75 to 1.5 times width of said rim base.

4,641,671

AUTOMATIC DISHWASHER

Munehiro Nogi; Ryutaro Ohashi; Koichiro Miyazaki, all of Sakai; Takashi Tanaka, Osaka; Koichiro Tamakoshi, Sakai; Yoshiziro Tamano, Kusatsu; Syotaro Wakita, Wakayama, and Toshimitsu Suzuki, Kishiwada, all of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Feb. 19, 1985, Ser. No. 702,795

Claims priority, application Japan, Feb. 20, 1984, 59-31088; Feb. 20, 1984, 59-23697[U]; May 17, 1984, 59-72822[U]; Dec. 28, 1984, 59-201276[U]

Int. Cl.[4] B08B *3/02*

U.S. Cl. 134—57 D **8 Claims**

1. A dishwasher comprising:

an enclosure for accommodating articles to be washed;

a washing solution tank arranged below the enclosure;

a hot water storage tank for containing a predetermined amount of hot water;

a plurality of nozzle means for spraying a liquid medium towards articles accommodated in the enclosure;

a circulating pump having both a suction and discharge port;

an electric motor for driving said circulating pump;

a first piping means connecting said discharge port of the circulating pump with said plurality of nozzle means;

a second piping means operatively connecting both said washing solution and hot water storage tanks with said suction port of the circulating pump;

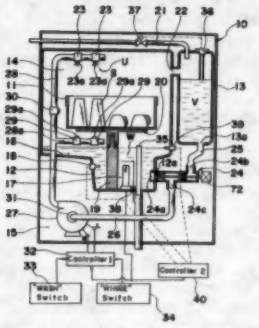
a control valve means disposed on the second piping means and operable for closing a first passage between the suction port and the hot water storage tank and opening a second passage between the suction port and the washing solution tank during a washing operation in which articles are washed and for opening and closing said first and second passages, respectively, during a rinsing operation in which articles are rinsed;

a water supply pipe operatively connected with said hot water storage tank;

a shut-off valve disposed on said water supply pipe;

a first level detector operatively connected to said hot water storage tank for detecting the level of water within said hot water storage tank and for generating a signal for closing said shut-off valve when the water within the hot water storage tank attains a predetermined level;

a second level detector operatively connected to said washing solution tank for detecting the level of liquid medium within the washing solution tank;



a water supply control circuit including a water supply start switch, for initiating a hot water supply, and a first operating circuit;

an actuating means operatively associated with said first level detector for selectively opening and closing said shut-off valve in response to said signal;

a hot water supply means for establishing fluid communication between the hot water supply tank and said washing solution tank by controlling said control valve means and said circulating pump for effecting the supply of hot water into said washing solution tank; and

a hot water supply interrupting means operable in response to a signal from said second level detector, indicative of the arrival of water within the washing solution tank to a predetermined level, for interrupting the operation of either said actuating means or said hot water supply means;

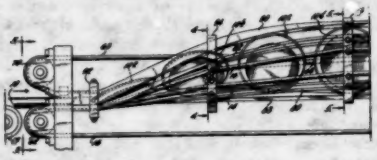
said first operating circuit being operable to actuate said actuating means, said hot water supply means and said hot water supply interrupting means when the water supply start switch is turned on.

4,641,672

APPARATUS FOR CLEANING DISH-LIKE OBJECTS

Harry M. Lewbart, Atco, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Mar. 4, 1985, Ser. No. 707,831
Int. Cl.[4] B08B 3/02
U.S. Cl. 134—62 1 Claim



1. Apparatus for cleaning dish-like objects having opposed major faces, comprising:

conveyor means having a first section for receiving dish-like objects placed thereon in horizontal positions to form a moving train of said objects, a second comprising means for receiving said train of objects from said first section and for turning them about axes parallel to the direction of motion from said horizontal positions to more upright positions and thereafter back again to horizontal positions as they move along a predetermined path in said second section, and a third section comprising means for receiving said objects from said second section while they are in said horizontal positions;

liquid-propulsion means for projecting cleansing liquid against both major faces of said objects as they pass through said second conveyor section in their more upright positions; and

dryer means for directing a flow of air over both major faces of said objects as they move along in their more upright positions in said second section, downstream of said liquid-propulsion means;

said conveyor means comprising a plurality of stationary guide rails extending on both sides of said major faces of said objects and defining between them said path through said second section, a plurality of longitudinally-tensioned moving belts extending along both sides of said path for frictionally engaging said major faces of said objects to slide them along said path between said rails, and a plurality of stationary belt-positioning guide blocks spaced apart along said path and bearing against said belts to hold them in position against said objects, said belts being unsupported between said guide blocks and bearing against said major faces of said objects at positions between said blocks in response to lateral pressure exerted by said belt in response to the longitudinal tensioning of said belts; and

(a) wherein said guide rails provide a track for said object which twists progressively from a horizontal position to a more upright position and then back to a horizontal position;

(b) wherein said belts engage both sides of said objects and comprise first and second belts which run horizontally beneath said objects in said first and third sections of said conveyor means and rise upwardly in the initial portion of said second section, travelling horizontally in the center portion of said second section, and returning downwardly in the downstream portion of said second section so as to maintain frictional contact with the underside of said object as it is tilted upwardly and downwardly;

(c) said belts comprising an upper belt running along the path of said conveyor means and bearing frictionally against the top major surfaces of said objects as they travel along said track in their upwardly-tilted positions;

(d) said upper belt passing across the centers of said objects; and

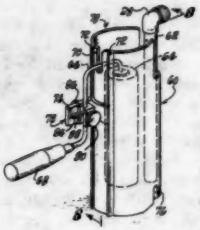
(e) said belts covering only a minor portion of the sides of said objects to expose a major portion of said top sides to impact by said cleansing liquid.

4,641,673

CLEANING DEVICE FOR PAINT ROLLERS AND BRUSHES

John M. Conley, 911 Crescent Dr., Monrovia, Calif. 91016, and Paul D. Bowen, P.O. Box 5201, Bend, Oreg. 97708

Continuation-in-part of Ser. No. 519,050, Aug. 1, 1983, abandoned. This application Jan. 16, 1985, Ser. No. 692,372
Int. Cl.[4] B08B 3/02
U.S. Cl. 134—138 7 Claims



1. An apparatus for cleaning water soluble paint from a paint roller or a paint brush comprising:

first water conducting manifold means having a first elongate longitudinal axis disposed parallel to the elongate interior axis of a tubular housing means containing the water conducting manifold means, the manifold means having a plurality of orifices producing a series of water jets disposed generally in a plane which is parallel to the elongate interior axis of the housing means;

water supply means in fluid communication with the manifold means;

the tubular housing means at least partially enclosing the manifold means and the paint roller or paint brush, the manifold means being held onto the interior of the housing means by extrusions which serve to clamp the manifold to the housing means, wherein the exterior of the housing means includes manually operable and adjustable clamping means to secure a holder rod of the paint roller such that the rotating axis of the roller is disposed in an effective position relative to the water jets such that spin may be produced by the action of the water jets upon the roller should a paint roller be cleaned by the apparatus;

removable brush holder means adapted to fit into one end of the housing means for retaining the brush within the interior of the housing means under the influence of the cleaning action of the water jets, should a brush be chosen to be cleaned within the apparatus;

said brush holder comprising a first cap element removably received within the upper end of the housing and an externally fluted cylindrical element having a hollow interior with an open lower end rotatably mounted in and extending below the cap into the housing means, the fluted element including clamping means to securely retain the handle of the brush within the hollow interior of the fluted element such that the series of water jets from the first water conducting manifold means will impact the flutes in a tangential manner and impart a spin to the fluted element and the clamped brush; and

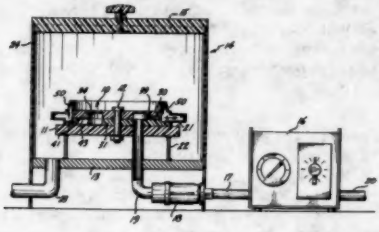
a second water conducting manifold means in fluid communication with the distal end of the first water conducting manifold means and connected thereto at a right angle having a second series of water jets emanating therefrom and directed generally upwardly parallel to the bristles of the paint brush and impacting therein.

4,641,674

WASHER FOR DISPOSABLE CUVETTE ROTORS

John D. Batjer; Lindsay R. Eades, both of Bellevue; Raymond J. Liedtke, and Arthur M. Zebelman, both of Seattle, all of Wash., assignors to LabAdapt, Inc., Seattle, Wash.

Filed Jan. 30, 1984, Ser. No. 574,988
Int. Cl.[4] B08B 9/02
U.S. Cl. 134—138 12 Claims



3. A washer for cleaning a plurality of cuvettes, each of said cuvettes having horizontal and vertical cavities, said cuvettes being interconnected to form a ring wherein said horizontal cavities are oriented radially and said vertical cavities are oriented axially, said washer comprising:

a generally cylindrical stator upon which said ring is positioned for rotation, said stator having a plurality of jets disposed about the circular periphery thereof, each of said jets being oriented to direct a flow of fluid at a predetermined angle into the horizontal cavities of said cuvettes so as to rotate said ring and clean said horizontal cavities;

an annular ledge encircling the lower periphery of said stator, said ledge including a jet, said jet being oriented to direct a flow of fluid at a predetermined angle into the vertical cavities of said cuvettes so as to clean said vertical cavities; and

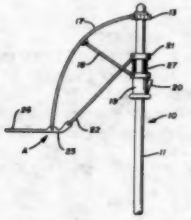
supply means for delivering fluid to said jets.

4,641,675

SPORT'S CAP UMBRELLA

Bing T. Wu, 12137 Front St., Norwalk, Calif. 90650

Filed Jun. 24, 1985, Ser. No. 747,800
Int. Cl.[4] A45B 11/00, 3/00, 19/00
U.S. Cl. 135—20 A 3 Claims



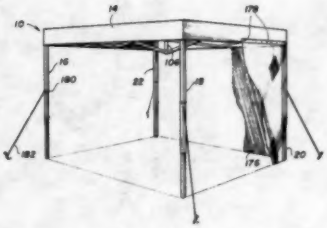
1. An improvement for an umbrella, the umbrella having a support shaft, a handle on the shaft a canopy defined by a plurality of canopy support ribs and a rib deployment mechanism which includes a sleeve slidably mounted on the support shaft with the canopy support ribs being attached to the sleeve, a water repellent material secured to and over said canopy support ribs, the improvement comprising a brim canopy extended around a portion of the perimeter of the canopy, the brim canopy comprising a number of brim ribs, separate material covering said brim canopy brim ribs and which is attached to the perimeter portion of the canopy, said brim canopy further including a rib connector fitting attached at one end thereof to one end of each brim rib and at a midportion thereof to one end of a canopy support rib and having a second end bent inwardly and upwardly to form a crank, said brim canopy further including a ring slidably mounted on said support shaft above said sleeve between said sleeve and said canopy, and a plurality of brim canopy support arms each attached at one end thereof to a rib connector second end and at another end thereof to said ring, some of said brim ribs having a length less than other of said brim ribs said sleeve moving on said shaft to operate said canopy and results in the extension of said brim canopy.

4,641,676

COLLAPSIBLE CANOPY STRUCTURE

James P. Lynch, 6901 W. 87th Way, #304, Arvada, Colo. 80003

Filed Jan. 23, 1984, Ser. No. 573,070
Int. Cl.[4] A45F 1/16; E04H 15/50
U.S. Cl. 135—110 5 Claims



3. A collapsible canopy shelter adapted to be positioned on the ground, comprising:

a plurality of upright corner support members each having a top and bottom and oriented to define vertical edges of a selected geometric configuration;

a slide bracket slideably mounted on each of said corner support members and moveable therealong;

an edge scissor assembly interconnecting adjacent ones of said corner support members, each respective edge scissor assembly oriented in a generally vertical plane and having one portion pivotally secured to the top of its associated corner support members and another portion pivotally secured to the slide bracket of its associated corner support members, said edge scissor assemblies operative to expand and contract whereby its associated corner support members are caused to move away from and toward one another to vary the dimensions of said geometric configuraiton, said canopy shelter being in an expanded position when said corner support members are moved away from one another and in a collapsed position when said corner support members are moved toward one another;

an internal scissor assembly extending across said geometric configuration and connected between at least two of said edge assemblies and operative to expand and contract in response to expansion and contraction of said edge sicssor assemblies;

first releasable latch means on each said corner support members for releasably retaining its respective slide bracket adjacent the top of its respective corner support member to retain said canopy shelter in the expanded position;

a flexible covering extending across the tops of said corner support members and sized to cover the upper surface of said geometric configuration when said canopy shelter is in the expanded position, said covering including a top panel extending across said upper surface and side panels connected to said top panel and extending downwardly alongside surfaces of said geometric configuration;

means along the lower edge of said side panels for release-

ably securing said side panels to said corner support members; and

an upright interior post secured to the internal scissor assembly and operative to positively support a central portion of said flexible covering when said canopy shelter is in the expanded position.

4,641,677

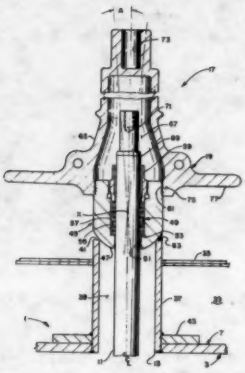
COAXIAL OPERATING ROD AND PACKING SEAL FOR TOP-OPERATED, BOTTOM OUTLET VALVE IN RAILWAY TANK CAR AND METHOD OF ALIGNING SAME

Robert F. Needham, St. Charles County, Mo., assignor to ACF Industries, Incorporated, Earth City, Mo.

Filed Feb. 25, 1986, Ser. No. 832,728

Int. Cl.[4] F16K *43/00, 51/00*

U.S. Cl. 137—15 **8 Claims**



1. The method of installing an outside unloading device for a railway tank car, the latter comprising a tank, a valve in the tank, said valve being selectively movable between an opened and a closed position which when opened permits unloading of the tank car, an operating rod operatively connected to said valve and extending within said tank, said tank having an opening therethrough, and a seat surrounding said opening, wherein the method comprises the steps of:

attaching said operating rod to said valve member in the tank, said rod generally within the tank and out through said tank opening;

installing a packing body having a central bore therethrough and a part-spherical surface on the end of said operating rod extending through said opening out beyond said tank, with the packing body bore and the operating rod being substantially centered relative to one another;

mating said part-spherical surface of said packing body with said seat in such manner as to permit universal angular swiveling movement of said packing body with respect to said seat such that with said operating rod received within said packing body bore, said packing body bore and said operating rod are substantially coaxial with respect to one another; and

sealably securing said packing body with respect to said seat after said packing body has been so coaxial aligned with said operating rod, and after said packing body has been mated to said seat.

3. In a bottom outlet tank, such as a railway tank car, having a valve in the bottom of the tank selectively movable between an opened and a closed position, a valve rod operatively connected to said valve extending through at least a portion of the interior of the tank and projecting out beyond the tank, and means for sealing said operating rod relative to the tank proximate the location on the tank at which said operating rod passes through said tank, wherein the improvement comprises: said tank having an opening therethrough through which said operating rod extends, a seat surrounding said opening, a packing body having a lower part-spherical surface and a central packing bore for receiving a portion of said operating rod, said packing bore receiving packing means constituting said means for sealing said operating rod relative to said packing body, said packing body part-spherical surface mating with said seat for permitting universal angular swiveling movement of said packing body relative to said seat within a limited range with respect to said seat such that said packing bore is substantially coaxial with respect to said operating rod, and means for securing said packing body with respect to said seat after said packing body has been coaxially aligned with said operating rod.

4,641,678

CONTROLLABLE DIFFUSER FOR AN AIR INTAKE OF AN AIRCRAFT

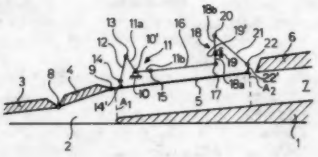
Jan T. Haas, Hamburg, and Robin-Leslie Hadwin, Buxtehude, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 9, 1985, Ser. No. 807,162

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1984, 3444822

Int. Cl.[4] B64D *33/02*

U.S. Cl. 137—15.1 **7 Claims**



1. A controllable diffuser for an air intake of an aircraft, comprising an air flow channel including an air inlet port, first means (**11**) for varying an inlet cross-sectional flow area (**A1**) of said air inlet port, an air outlet port, and second means (**21, 22**) for varying an outlet cross-sectional flow area (**A2**) of said air outlet port, said second means (**21, 22**) forming a backwardly facing step (**23**) in said outlet cross-sectional flow area (**A2**) for stabilizing a controlled boundary layer separation at said outlet cross-sectional flow area (**A2**).

4,641,679

FEED DEVICE FOR A TWO-PHASE FLUID PUMP AND A HYDROCARBON PRODUCING INSTALLATION WITH SUCH FEED DEVICE

Marcel Arnaudeau, and Philippe Rousset, both of Paris, France, assignors to Institute Francais du Petrole, Rueil Malmaison, France

PCT No. PCT/FR84/00304, § 371 Date Aug. 30, 1985, § 102(e) Date Aug. 30, 1985

PCT Filed Dec. 31, 1984, Ser. No. 774,602

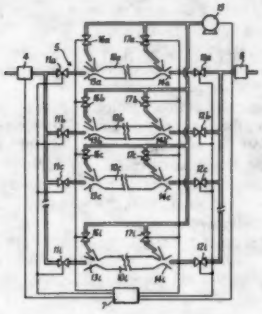
Claims priority, application France, Dec. 30, 1983, 83 21089

Int. Cl.[4] F04D *31/00*

U.S. Cl. 137—88 **10 Claims**

1. A feed device for a two-phase liquid pump for supplying to the inlet of the pump a two-phase fluid having a volumetric ratio of gaseous phase to liquid phase compatible with the operating characteristics of the pump, said device comprising, a main pipe having an inlet adapted to be connected to a source of two-phase fluid and an outlet adapted to be connected to the inlet of the pump, a plurality of auxiliary pipes connected in parallel to said main pipe, each of said auxilliary pipes having an inlet adapted to be connected to the source of two phase fluid and an outlet adapted to be connected to the inlet of the

pump, each of said pipes having an isolating and flow regulating gate between the outlet thereof and the inlet of the pump,



and means for introducing a carrier liquid into each of said pipes.

4,641,680

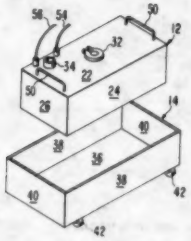
WASTE SOLVENT RECEPTACLE

Thomas S. Been, Saratoga, Calif., assignor to Process and Cryogenic Services, Inc., San Jose, Calif.

Filed Aug. 23, 1985, Ser. No. 768,896

Int. Cl.[4] E03B *3/40*; F16K *31/02*

U.S. Cl. 137—312 **7 Claims**



1. A waste solvent receptacle comprising:

a closed waste tank having a top provided with a solvent inlet port, said waste tank adapted to receive solvent through the port; and

a mobile container having an open top, a fluid impervious bottom, and wall structure secured to and extending upwardly from said bottom, said waste tank being removably received in said container through said open top and being supported on said bottom, said waste tank top includes a top wall and means on the topwall thereof for defining a pair of handles on said waste tank to facilitate removal of said waste tank from said container, said container having a volume greater than the volume of the waste tank so that a space is formed in surrounding relationship to the waste tank and substantially surrounding a major portion of said waste tank when the waste tank is centrally located in the container, whereby the container can receive leakage and overflow solvent from the waste tank, said top wall having a solvent outlet port thereon and spaced from the inlet port thereof for pumping said solvent out of said waste tank and electrical level sensor means for controlling the solvent level within said waste tank.

4,641,681

CLAMP FOR USE WITH TOP ENTRY BALL VALVE

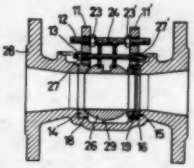
Morio Ikematsu, Takaishi, and Hiromichi Hiranuma, Sakai, both of Japan, assignors to Nippon Ball Valve Co., Ltd., Osaka, Japan

Filed May 2, 1986, Ser. No. 858,796

Claims priority, application Japan, May 16, 1985, 60-74099[U]

Int. Cl.[4] F16K *43/00*, *51/00*

U.S. Cl. 137—315 **4 Claims**



1. A clamp for use with a top entry ball valve comprising a valve casing, a valve body mounted in the valve casing, said valve casing having an opposed pair of seat receiving surfaces formed therein, a seat ring disposed between said valve body and one of said receiving surfaces at the low-pressure side, a seat ring assembly comprising another seat ring, a belleville spring and a seat ring holder and disposed between said valve body and the other of said seat receiving surfaces at the high-pressure side, said clamp comprising:

an opposed pair of clamping plates;

a clamping bolt screwed through said clamping plates;

a fulcrum bolt screwed through said clamping plates and disposed below said clamping bolt;

said clamping plates being formed at lower end thereof with a concave portion of a shape complementary to the shape of the top of said first named seat ring and said seat ring holder, respectively, and being formed in said concave portion with an engagement portion for engagement with and holding said first named seat ring and said seat ring holder for removal and insertion of said first named seat ring, said seat ring assembly and said valve body from and into said valve casing as a single unit;

a pair of clamping members threadedly mounted on said clamping bolt for pressing said clamping plates away from each other; and

means provided for said fulcrum bolt for keeping constant the distance between said clamping plates against the force applied by said clamping members during the assembly as a single unit into and out of said valve casing.

4,641,682

VALVE WITH ROTARY VALVE HEAD

Gary L. Harris, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

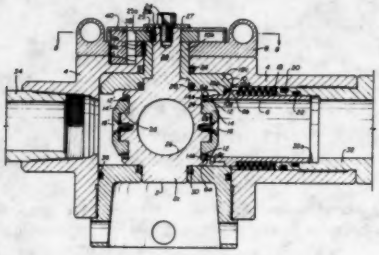
Filed Apr. 29, 1985, Ser. No. 728,611

Int. Cl.[4] F16K *43/00*, *25/00*, *5/20*

U.S. Cl. 137—329.04 **1 Claim**

1. A combination flow control and check valve apparatus for use in a fluid flow conduit comprising: a valve housing having a bore communicable with the conduit; a valve head having a post portion journalled in said valve housing for rotation of the valve head through 90° about an axis transverse to the axis of the housing bore between open and closed positions; a pair of annular seals secured to the valve head in diametrically opposed relation; a cylindrical element movable relative to the valve head and engagable with a selected one of the annular seals to isolate portions of the conduit on opposite sides of the valve head when the valve head is in the closed position; resilient means urging said cylindrical element into sealing engagement with said selected annular seal, the cylindrical element being exposed to pressure on both sides of the

valve head, the cylindrical element being shiftable into engagement with the annular seal when force due to the pressure differential in a first direction exceeds a prescribed level and shiftable out of engagement with the annular seal when the force due to the pressure differential in an opposite second direction exceeds the force exerted by said resilient means; a cam housing having a tubular portion rotatably mounting said valve head post and journalled in said housing; an operating handle secured to said tubular portion for rotating said cam housing; cam means on said cam housing engagable with said



cylindrical element to shift said cylindrical element axially out of engagement with said annular seal; a plate element keyed to said post and disposed adjacent to said operating handle; and pin and slot means operatively connecting said handle and said plate element to rotate said valve head 90° from said closed position to said open position only after said cylindrical element is shifted out of engagement with said annular seal; said pin being removable to permit rotation of said valve head through 180° to position the other annular seal for engagement by said cylindrical element.

4,641,683

VALVE ARRANGEMENT FOR CONTROLLING THE FLOW OF MEDIUMS

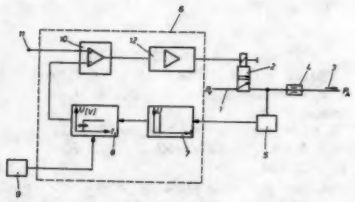
Ulf Mürner, Crailsheim, Fed. Rep. of Germany, assignor to Voith Turbo GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 12, 1985, Ser. No. 754,848

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1984, 3427204

Int. Cl.⁴ G05D *16/00*

U.S. Cl. 137—487.5 **11 Claims**



1. A valve arrangement for controlling the flow of a medium in a line, comprising:

an on-off valve arranged in said line in communication with said medium flow and actuatable only between open and closed positions for respectively allowing and blocking said medium flow in said line through said valve,

a throttle position in said line adjacent to but downstream of said on-off valve,

a pressure sensor arranged in said line between said on-off valve and said throttle and within such close proximity to said on-off valve and throttle that the activation of said on-off valve to its opened and closed position is sensed by said pressure sensor as a corresponding rise and drop in the pressure of said medium flow in said line between said valve and throttle, said pressure sensor being adapted to convert said sensed pressure rise or drop to a corresponding electrical output signal, and

an actuator connected between said on-off valve and said pressure sensor and being operable upon receiving said corresponding output signals to cause actuation of said on-off valve to its closed position upon a pressure rise in said medium flow in said line due to a preceding opening of said on-off valve being sensed by said pressure sensor and to cause actuation of said on-off valve to its opened position upon a pressure drop in said medium flow in said line due to a preceding closing of said on-off valve being sensed by said pressure sensor, such that said on-off valve is so actuated repetitively to achieve the desired control of said medium flow through said valve and in said line in dependence upon each preceding actuation thereof.

4,641,684

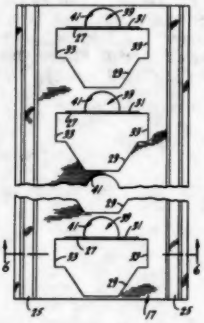
RAIL FOR AN AIR TURNING VANE ASSEMBLY

Ernest P. DeLord, 200 Pine St., Prospect Heights, Ill. 60070

Division of Ser. No. 610,630, May 15, 1984, Pat. No. 4,586,540. This application Jan. 27, 1986, Ser. No. 823,012

Int. Cl.⁴ B21D *39/00*

U.S. Cl. 137—561 A **3 Claims**



1. A rail for an air turning vane assembly, said rail being formed of an elongated generally planar sheet of sheet metal, and

a plurality of upstanding tabs located along the length of the rail with each tab formed by a partially cutout portion of the rail, each partially cutout portion being defined by a cut in the rail in the general shape of the tab with one side remaining uncut, each tab being bent along a fold line defined by said uncut side so that the tab extends generally at right angles to the plane of the rail,

said rail defining a cutout portion defining an enlargement at each side of each tab cutout so that the combined width of the tab cutout and the cutout portions on each side of the tab cutout is greater than the width of the tab.

4,641,685

AXIALLY SYMMETRIC VALVE ASSEMBLY

John Rudelick, Milwaukee, Wis., assignor to Universal-Rundle Corporation, New Castle, Pa.

Continuation of Ser. No. 638,310, Aug. 7, 1984, abandoned. This application Dec. 19, 1985, Ser. No. 810,830

Int. Cl.⁴ F16K *11/072, 25/00*

U.S. Cl. 137—625.31 **12 Claims**

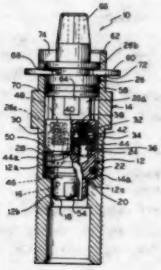
1. An axially symmetric valve assembly for insertion into a valve body, comprising:

an axially symmetric valve insert adapted to be positioned

axially within said valve body, said valve insert having a pair of symmetrically disposed longitudinally extending fluid passageways including an inlet opening at one end in communication with a source of fluid under pressure and said fluid passageways and a pair of symmetrically disposed outlet openings at the other end remote from said fluid source and including seal means disposed between said valve insert and said valve body to only permit flow of said fluid through said symmetrically disposed fluid passageways, said valve insert including a sealing surface extending about said symmetrically disposed outlet openings;

an axially symmetric valve stem adapted to be in axially positioned alignment with said valve insert, said valve stem having a stem surface adapted to be positioned in generally parallel closely spaced relation to said sealing surface of said valve insert, said valve stem being spaced inwardly of said valve body about at least a portion of its circumferential extent to define a symmetrical fluid passageway between said valve stem and said valve body and having a pair of symmetrically disposed longitudinally extending seal-receiving bores in said stem surface, said valve stem being rotatable for selective alignment of said symmetrically disposed bores with said symmetrically disposed outlet openings;

said symmetrically disposed outlet openings in said valve insert extending longitudinally in spaced parallel relation to the axis of said axially symmetric valve insert and said



symmetrically disposed seal-receiving bores in said axially symmetric valve stem also extending longitudinally in spaced parallel relation to the axis of said axially symmetric valve stem;

said axially symmetric valve stem being generally cylindrical in shape and having symmetrical upper and lower body portions and a symmetrical intermediate body portion, said symmetrical intermediate body portion being of lesser diameter than the maximum lateral dimension of said symmetrical lower body portion to define a symmetrical expanded fluid chamber and being disposed such that said symmetrical expanded fluid chamber is adjacent an outlet in said valve body, said symmetrically disposed seal-receiving bores being disposed in said symmetrical lower body portion of said axially symmetric valve stem;

said valve body being generally cylindrical in shape and having a greater inner diameter than the maximum lateral dimension of said symmetrical lower body portion, said valve body being spaced outwardly from said symmetrical lower body portion substantially about its entire periphery, said fluid being adapted to flow between said symmetrical lower body portion and said valve body and into said symmetrical expanded fluid chamber defined by said symmetrical intermediate body portion and through said outlet in said valve body;

symmetrically disposed resilient seal means extending from said symmetrically disposed seal-receiving bores for compressed sealing engagement with said sealing surface of said axially symmetric valve insert;

means for preventing rotation of said valve insert within said valve body during rotation of said valve stem, said rotation preventing means permitting relative rotation between said valve stem and said valve insert, said relative rotation permitting selective alignment of said seal-receiving bores and resilient seal means with said outlet openings;

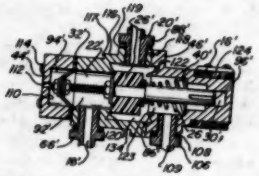
whereby said axially symmetric valve assembly is closed when said symmetrically disposed seal-receiving bores and symmetrically disposed resilient seal means are aligned with said symmetrically disposed outlet openings and said axially symmetric valve assembly is open when said symmetrically disposed seal-receiving bores and symmetrically disposed resilient seal means are not aligned with said symmetrically disposed outlet openings.

4,641,686

SOLENOID OPERATED VALVE PRESSURE BALANCED IN A CLOSED POSITION BY A SINGLE DIAPHRAGM

Phillip D. Thompson, P.O. Box 453 Blue Stone La., York, Me. 03909

Filed Dec. 18, 1984, Ser. No. 683,063
Int. Cl.[4] F16K *11/044, 31/06*
U.S. Cl. 137—625.65 **4 Claims**



1. A solenoid operated balanced valve for controlling the flow of air under pressure between an air supply and an air destination, comprising in combination:

a body having an inlet chamber and an outlet chamber formed interiorly thereof, said inlet chamber in air communication with said air supply and said outlet chamber in communication with said air destination, a valve seal mounted on a valve stem slideable within said body, said valve seal movable between two valve seats positioned either side thereof and formed within said body, a closed position of said valve defined when said valve seal is mated against said valve seat adjacent said inlet chamber and an open position defined within said valve seal is mated against said valve seat in said outlet chamber, said outlet chamber further having an exhaust formed through said valve body communicating with atmospheric pressure, said valve stem being connected at another end to a diaphragm separating said inlet chamber from an expansion chamber, said diaphragm being of equal area to the area of the valve seal circumscribed by the one valve seat, said expansion chamber in communication with atmosphere through a port formed through said valve body, said expansion chamber in communication with said exhaust and said outlet chamber when the valve is in the closed position, and biasing means for urging said valve seal against said first valve seat when said valve is in a closed position, forces acting to open said valve from said closed position being equal by reason of equal areas of diaphragm and valve seal circumscribed by the first valve seat.

4,641,687

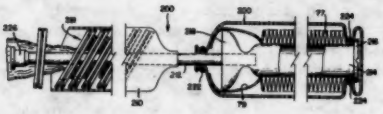
CASING ARTICLE

Vytautas Kupcikevicius, Chicago, Ill., assignor to Viskase Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 429,395, Sep. 30, 1982, Pat. No. 4,466,463. This application Aug. 20, 1984, Ser. No. 642,242

Int. Cl.[4] F16L *11/00*; A22C *11/02*

U.S. Cl. 138—118.1 17 Claims



1. A shirred casing article comprising:

(a) an elongated tubular member having an internal bore of a size sufficient to permit the tubular member to fit over, or to serve as a stuffing horn and means at an aft end of the tubular member for connecting said tubular member to a stuffing machine;

(b) a first component carried on said tubular member towards the fore end thereof, said first component comprising an array including a plurality of flattening disks arranged in pairs and disposed on said tubular member, said disks each having an opening to accommodate passage of said tubular member and said disks each being slidable along said tubular member;

(c) a second component carried on said tubular member towards the aft end thereof, said second component including a cellulosic casing in the form of a shirred stick which shirred stick is separated and longitudinally spaced from said first component, said cellulosic casing, in use, being deshirrable forward from said shirred stick over and about the disks, and said casing containing an agent which has a detrimental effect on the disks when said disks are exposed to said agent over time; and

(d) means providing a barrier to said agent, said means being removably disposed about at least one of said components and about a portion of said tubular member for isolating said cellulosic casing and said array of said disks from each other, and for preventing the exposure of said disks to said agent over time and prior to use of said article.

4,641,688

WEFT THREAD BRAKING MECHANISM HAVING A STEPWISE CONTROLLABLE BRAKING EFFECT

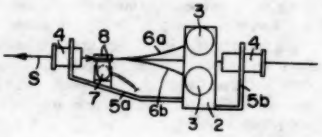
Fritz Gehring, Lindau, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Dec. 9, 1985, Ser. No. 807,165

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1984, 3446567

Int. Cl.[4] D03D *47/34*

U.S. Cl. 139—450 8 Claims



1. A weft thread brake for applying a stepwise controllable braking effect to a weft thread, comprising two leaf springs resting against each other and forming a funnel type passage for the respective weft thread, said two leaf springs having a normal biasing force for applying a first step in the braking effect individually to said weft thread, mounting means (1, 2, 3) for mounting said two leaf springs so that the position of at least one of said two leaf springs is changeable relative to the position of the other leaf spring, and individually controllable force application means operatively arranged for directly applying to said leaf springs a stepwise increase or decrease of a force directed substantially perpendicularly to said leaf springs, whereby said normal biasing force of said leaf springs is changed and the respective braking effect is individually controlled in a stepwise manner for said weft thread.

4,641,689

METHOD AND EQUIPMENT FOR MAKING WIRE STRANDS

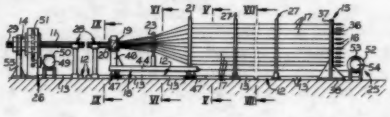
Philip Christian, Norton, near Doncaster, and Alan I. Tawse, Hatfield, near Doncaster, both of England, assignors to Bridon plc, Doncaster, England

Filed Aug. 13, 1984, Ser. No. 640,686

Claims priority, application United Kingdom, Aug. 19, 1983, 8322441

Int. Cl.[4] B21F *7/00*

U.S. Cl. 140—149 8 Claims



1. A method of making a large wire strand comprising:-assembling a multiplicity of wires side-by-side; securing all the wires permanently together in a predetermined closed array at one, leading end; securing all the wires separately at the other, trailing end, spaced apart and freely rotatable; applying tension to each of the wires; progressively guiding the wires intermediate the ends into the closed array through guiding means; moving the aforesaid guiding means progressively from the leading end to the trailing end; rotating the leading end progressively as the aforesaid guiding means moved progressively and with a predetermined relationship; permanently securing all the wires together at the trailing end of the closed array; and releasing the trailing ends of the wires and the tension applied thereto.

4,641,690

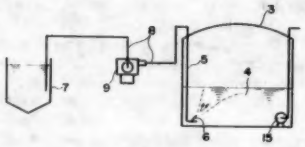
METHOD AND APPARATUS FOR PREVENTING STRATIFICATION OF LIQUEFIED GASES IN A STORAGE TANK

Takeo Ishiwatari, Chiba; Yasuchiyo Sasaki, Narita; Rokuro Misawa, and Shingo Takao, both of Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 329,326, Dec. 10, 1981, abandoned. This application May 13, 1985, Ser. No. 733,408

Int. Cl.[3] B65B *3/04*

U.S. Cl. 141—4 8 Claims



1. A method for mixing miscible liquefied gases wherein a second liquefied gas different in density from a first liquefied gas contained within a storage tank is injected into said storage tank from the bottom portion thereof, said method comprising:

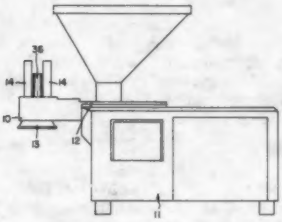
providing an upwardly directed nozzle at the bottom portion of a storage tank near the inner wall thereof; orienting said nozzle to provide a focused jet stream of said second liquefied gas to issue upwardly into said storage tank toward the center of the tank and into said first liquefied gas; and causing said jet stream to reach the free surface of said first liquefied gas in said storage tank, whereby said liquefied gases are mixed together.

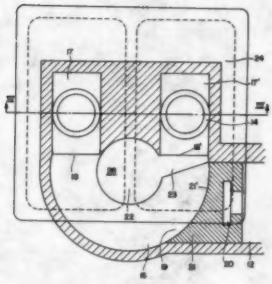
4,641,691

BULK MEAT FEED MACHINE

Narciso L. Corominas, Besalu, Spain, assignor to Metalquimia, S.A., Gerona, Spain

Filed May 23, 1984, Ser. No. 613,390
Claims priority, application Spain, May 27, 1983, 523.080
Int. Cl.[4] B65B *1/22, 3/12*
U.S. Cl. 141—73 **4 Claims**





1. A bulk feeding machine having a support frame and a feeding means on the support frame for feeding bulk material to a feeding station for dispensing the material into containers, comprising:

feeding channel having an outlet through which material is fed to the feeding station;

a feeding head supported on the support frame adjacent said outlet of said feeding channel;

a cylindrical cavity in said feeding head having a cross-sectional configuration in the form of a circular segment portion which has an arc which is slightly greater than a semi-circle and which has a generally flat side portion, said circular segment portion communicating with said outlet of said feeding channel;

a first piston-type plunger reciprocably operable in said feeding channel to push material therethrough toward said outlet of said feeding channel;

two spaced openings in said flat side portion;

two passageways in said feeding head, each communicating with one of said two spaced openings and each of two said spaced passageways having an outlet;

said circular portion of said cavity having a central axis;

a blade member rotatably mounted in said cavity about a blade member axis that is coaxial with said central axis of said circular portion of said cavity, said blade member having such dimensions and such a shape as to, at each end position of its travel, at least substantially close one of said two spaced openings;

a means to rotate said blade member alternately in opposite directions within said cavity about said blade member axis so that material fed through said feeding channel outlet into said cavity is pushed, by said blade member when operated alternately, toward and through said openings;

a second and a third piston-type plunger slidably disposed reciprocation in respective ones of said two passageways;

a means to reciprocate said second and third plungers alternately in said two passageways to push material entering therein through said two spaced openings toward said respective said outlets of said two passageways;

a bell-shaped cover member mounted on said feeding head;

two outlet conduits extending through said cover member and aligned with respective ones of said two passageways to conduct material fed through said two passageways to the containers;

a seal means on said cover member adapted to be cooperatively engageable with the containers for sealing the inside of the containers, said two passageways, and said cavity;

a means for producing a vacuum inside of said cover member, said two passageways, and said cavity;

a concave curved inner end disposed on said first piston-type plunger, said concave curved inner end conforminginge to the inner end surface of said circular portion of said cavity; and

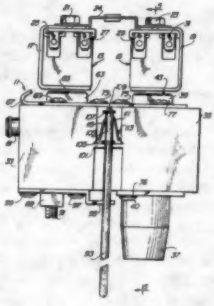
said blade member extending radially in said cavity, and having an outer edge closely spaced to the inner surface of said circular portion.

4,641,692

BEVERAGE DISPENSER WITH AUTOMATIC CUP-FILLING CONTROL

Clay Bennett, Glendale, Ariz., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jun. 11, 1985, Ser. No. 743,568
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—95 **15 Claims**



1. A beverage dispenser having an arrangement for automatically controlling the filling of a cup comprising:

at least one source of beverage;

at least one valve means for controlling discharge of beverage from said source into the cup to be filled;

actuating means to cause said valve means to be energized to initiate dispensing of the beverage into the cup to be filled;

an electrically conductive member associated with the beverage dispenser and disposed to be positioned adjacent to and outside of the cup that is being filled;

circuit means electrically interconnecting said electrically conductive member and said valve means to thereby electrically interconnect said conductive member with beverage flowing through said valve means; and

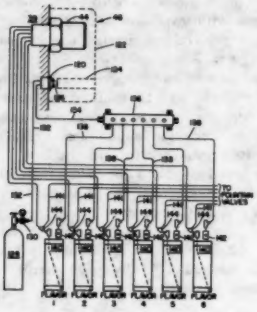
control means for operating said valve means in response to a change in impedance between said electrically conductive member and the beverage, when the cup has been filled to a pre-determined level, to discontinue beverage flow to the cup.

4,641,693

BULK SYRUP DELIVERY SYSTEM WITH A VENT AND PRESSURE SUPPLY VALVE

John J. Rakucewicz, Northport, N.Y., assignor to Pepsi Co, Inc., Purchase, N.Y.

Filed Mar. 21, 1985, Ser. No. 714,679
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—98 **4 Claims**



1. A bulk syrup system for the bulk delivery to an account of a plurality of different flavored syrups, in which a compartmentized tank delivery truck has a plurality of separate compartments for the storage and delivery of a plurality of different flavored syrups, and a multichannel delivery hose is coupled to the plurality of separate compartments and has at least one channel for each different flavored syrup, with a multichannel delivery coupling at the delivery end of the multichannel delivery hose, a bulk syrup receiving and delivery arrangement at an account, comprising:

a. a plurality of separate tanks at an account, one for each different flavored syrup, with the account including a receiving terminal in which a corresponding matching multichann receiving coupling is provided for connection to the delivery coupling;

b. means pressurizing each of the separate tanks at an account allow the tanks to pump syrup during a syrup dispensing operation, including a source of pressurized gas, and at least one pressure supply line leading from said source of pressurized gas to said plurality of separate tanks; and

c. a three way valve positioned in said pressure supply line, said three way valve having a first position, assumed during normal syrup dispensing operations, in which pressurized gas is supplied through said three way valve to said plurality of separate tanks and a second position, assumed during a bulk syrup delivery operation, in which the source of pressurized gas is disconnected from the plurality of separate tanks, and the plurality of separate tanks are vented to vent any pressurized gas therein.

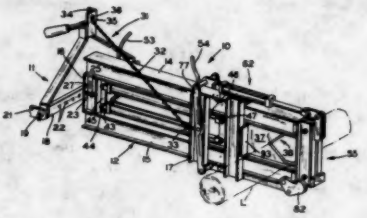
4,641,694

TREE FELLING, LOG CUTTING AND SPLITTING MACHINE

Kenneth A. Rohde, 3950 C.R. 195, Clyde, Ohio 43410

Filed Jan. 17, 1986, Ser. No. 819,588
Int. Cl.[4] B27L *7/00*
U.S. Cl. 144—3 K **17 Claims**

1. A tree felling and log cutting and splitting apparatus for attachment to the rear hitch of a tractor, comprising a generally rectangular framework, connecting means attaching said framework at its forward end to said hitch for pivotable movement between horizontal and vertical positions, adjustable-length tie means extending between said rear hitch and said framework for carrying said framework at selected angular



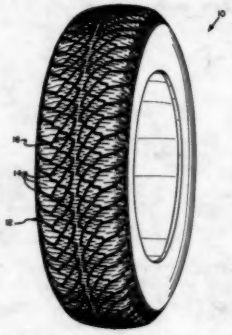
attitudes and heights, a shear blade mounted for reciprocating longitudinal movement within said framework, means for advancing and retracting said blade within said framework, and an anvil at the rear end of said framework against which said shear blade urges trees and logs for cutting therethrough upon its advancing stroke.

4,641,695

TREAD FOR A PNEUMATIC TIRE

Daniel J. Lindner, Canal Fulton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 632,089, Jul. 18, 1984, abandoned. This application Sep. 16, 1985, Ser. No. 776,548
Int. Cl.[4] B60C *11/06*
U.S. Cl. 152—209 A **16 Claims**



1. A pneumatic tire comprising a tread portion having independent projections defined by:

(a) first and second primary grooves, each circumferentially spaced apart primary grooves, each primary groove comprising two sections oriented at angular relationships with respect to each other, said sections having widths such that the primary grooves remain open in a footprint of the tire, each groove of said first set of primary grooves extending generally axially inwardly from a first axial edge of the tread but not intersecting a mid-circumferential plane of the tire, each groove of said second set of primary grooves extending generally axially inwardly from a second axial edge of the tread but not intersecting the mid-circumferential plane of the tire, each primary groove having an axially inner end that is located an axial distance of not more than 15% of the tread width away from the mid-circumferential plane of the tire, an axially outermost section of each of the grooves of said first set of primary grooves extending axially inwardly from the first axial

edge of the tread in one generally circumferential direction and the second section of each of the grooves of said first set of primary grooves extending from an axially inner end of said axially outermost section to an axially inner end of the groove in an opposite generally circumferential direction, an axially outermost section of each of the grooves of said second set of primary grooves extending axially inwardly from the second axial edge of the tread in a generally circumferential direction such that if the axially outermost sections of the grooves of said first and second sets of primary grooves are projected axially inwardly they will intersect and form a series of V's which all point in one circumferential direction of the tire, and the second section of each of the grooves of said second set of primary grooves extending from an axially inner end of said axially outermost section to the axially inner end of the groove in the same generally circumferential direction as said axially outermost section of the same groove such that if the second sections of the grooves of said first and second sets of primary grooves are projected axially inwardly they will not intersect to form V's; and

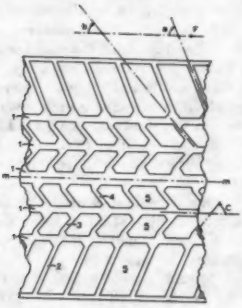
(b) first and second sets of circumferentially spaced apart secondary grooves, said secondary grooves having widths such that the secondary grooves remain open in a footprint of the tire, a secondary groove extending generally axially outwardly from the axially inner end of each of the primary grooves and intersecting a plurality of primary grooves, but no secondary grooves intersect the axial edges of the tread.

4,641,696

DIRECTIONAL TIRES FOR AUTOMOBILES

Fikret Semin; Romano Guermandi, and Gian C. Cucco, all of Milan, Italy, assignors to Societa' Pneumatici Pirelli S.p.A., Italy

Filed Feb. 4, 1985, Ser. No. 697,933
Claims priority, application Italy, Feb. 10, 1984, 19557 A/84
Int. Cl.[4] B60C *11/11*
U.S. Cl. 152—209 R **17 Claims**



1. A tire for vehicle wheels, comprising:

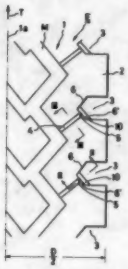
a substantially toroidal carcass having a midcircumferential equatorial plane perpendicular to the axis of rotation and a tread band disposed in the crown of said carcass and positioned for coming into ground contact during tire running, said tread band having a plurality of grooves which define a raised pattern means for improving the driving characteristics and the road holding behavior of said tire under varied driving conditions, said grooves comprising a plurality of circumferential and transversal grooves dividing said tread band symmetrically with respect to the equatorial plane into a plurality of blocks disposed in at least six circumferentially extending adjacent rows such that there are at least three rows on each side of the midcircumferential equatorial plane; the transversal grooves which delimit from one another the blocks of the two axially central rows on opposite sides of said equatorial plane, being inclined in the same circumferential direction and inclined in the contrary sense with respect to the circumferential direction of the tire with respect to the sense of the transversal grooves that delimit the remaining axially outer rows.

4,641,697

PNEUMATIC TIRE TREAD FOR HEAVY DUTY TRUCKS

Ken Takahashi, Atsugi, and Osamu Takahashi, Hiratsuka, both of Japan, assignors to The Yokohama Rubber Co., Ltd, Tokyo, Japan

Filed Aug. 30, 1985, Ser. No. 770,933
Claims priority, application Japan, Aug. 31, 1984, 59-180749
Int. Cl.[4] B60C *11/04*
U.S. Cl. 152—209 R **3 Claims**



1. A pneumatic tire for heavy duty trucks, provided in the tread thereof with lug grooves opening into tread shoulders and auxiliary grooves having smaller depth and smaller width than said lug grooves and having one-side ends thereof opening into lateral walls of said lug grooves and the other ends thereof opening into the lateral walls of main circumferential grooves, which pneumatic tire is characterized by disposing on said lateral walls of said lug grooves containing said openings of said auxiliary grooves a shelf part at a level flush with the bottom surface of said auxiliary grooves, wherein the shelf part extends into the lug grooves.

4,641,698

AUTOMATED VEHICLE TIRE PRESSURIZATION SYSTEM

Frank E. Bitonti, Detroit, Mich., assignor to AM General Corporation, Livonia, Mich.

Filed Nov. 8, 1984, Ser. No. 669,588
Int. Cl.[4] B60C *23/14*
U.S. Cl. 152—416 **29 Claims**

1. A system for automated pressurization of pneumatic tires for a vehicle comprising:

pump means, operatively connected to and energized by the vehicle, for providing a continuous output of pressurized air;

mode selector means, having a first, second and third selectable operating modes corresponding to charging, pressure maintenance and venting of the tires, respectively, for permitting operator selection of the system operating mode;

pneumatic control circuit means, interconnected among the pump means, the mode selector means and the vehicle tires and responsive to the selected operating mode of the mode selector means, for enabling tire charging in the first mode, and tire ventilation in the third mode; and

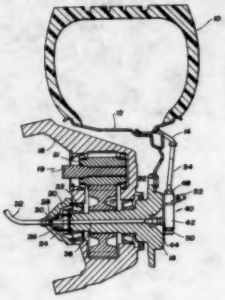
wherein said mode selector means comprises means for diverting said continuous output to bypass said pneumatic control circuit means and closing said pneumatic control

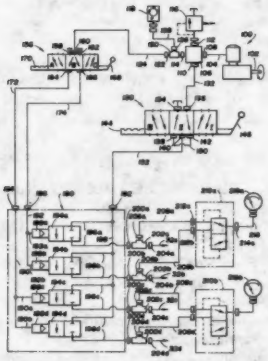
circuit means in said second mode, whereby the vehicle tires and the pneumatic control circuit means are pneumatically isolated from said continuous output of said pump in said second mode.

10. A system for automated pressurization of pneumatic tires for a vehicle comprising:

pump means, operatively connected to and energized by the vehicle, for providing a continuous output of pressurized air;

mechanically actuated, pneumatic mode selector means, having first, second and third selectable operating modes





corresponding to charging, pressure maintenance and venting of the tires, respectively, for permitting operator selection of the system operating mode;

wholly pneumatic control circuit means, interconnected among the pump means, the mode selector means and the vehicle tires and responsive to the selected operating mode of the mode selector means, for enabling tire charging in the first mode, and tire ventilation in the third mode; and

conduit means for coupling said mode selector means in fluid communication with said control circuit means through a single passageway.

4,641,699

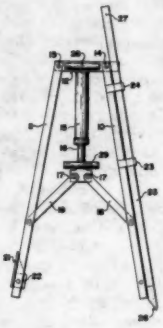
TIRE BEAD BREAKING DEVICE

Dale J. Giles, 1323 Ave. F North, and Garry C. Mercer, 1232 Ave. D North, both of Saskatoon, Saskatchewan, Canada (S7L 1P1)

Continuation of Ser. No. 602,042, Apr. 19, 1984, abandoned. This application Mar. 4, 1986, Ser. No. 836,076

Int. Cl.[4] **B60C** *25/06*

U.S. Cl. 157—1.17 **8 Claims**



1. A breaker for a bead of a tire relative to a rim of a wheel, the breaker comrpising a pair of elongate generally parallel levers, one of said levers carrying a tool head at one end thereof, the other of said levers carrying a reaction member on one end thereof on a face thereof remote from said one lever, pivot pin means coupling the levers at a position spaced from said one ends, hydraulic cylinder and piston means adapted to apply force between said levers such that said tool head can be moved in a direction of working movement transverse to the length of the levers from a retracted position, in which said tool head and reaction member lie closely adjacent so that they can be inserted into a space between the tire and an adjacent body, to an expanded position for said working movement of said tool head with a reaction force from said working movement being transmitted to said adjacent body through said reaction member, said tool head having a substantially sharpened front edge and side walls converging toward said edge for engaging between the bead and the rim, said tool head projecting from said one end of said one of said levers, said sharpened edge lying at right angles to the length of said one of said levers and transverse to said direction of working movement, and means mounting said tool head on said one end of said one lever for movement of said tool head relative thereto longitudinally thereof, said mounting means being adapted to prevent in said working direction movement of said sharpened front edge relative to said one end whereby with said levers extending substantially radially of said wheel, said tool head can be forced in a direction along the length of said one lever into engagement between the bead and the rim and whereby said working movement causes the tool head in said engagement to force the bead from the rim.

4,641,700

CURTAIN OF WINDABLE OSCILLATING BLADES

Salvador M. Zveibil, 65 Uranium Street, Sao Paulo, Brazil (04637)

Filed Feb. 17, 1984, Ser. No. 581,330

Claims priority, application Brazil, Apr. 15, 1983, PI8302030

Int. Cl.[4] **E06B** *9/08*

U.S. Cl. 160—133 **3 Claims**

1. Curtain of windable, rotatable blades comprising:

driving means for receiving rotational motion;

winding cylinder means rotatable about a longitudinal axis thereof;

reducing means coupled to said winding cylinder means and said driving means for reducing said rotational motion and applying a reduced rotational motion to said winding cylinder, comprising first and second differential, screws, located coaxially, coacting with first and second free nuts, respectively, said first screw being coupled to said driving means so as to transfer its rotation thereto, and said second screw being coupled to said winding means, said screws

having helical thread channels of different pitch conforming with respective threads of said nuts, said nuts being interconnected at a distance by a nut carrier mounted for linear motion coaxial with said screws and in such a manner that when said first screw turns said second screw comes into rotation, said thread channel pitches of said screws being selected so that fast rotations of said first screw are reduced when said second screw is rotated.

4,641,701

DIES FOR FORMING A CHAIN

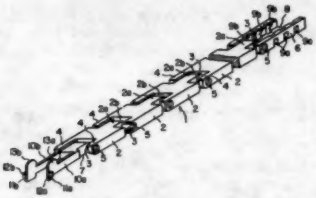
Ken Yamamoto, 18-19 5 Chome Kamiuma Setegaya ku, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,942

Claims priority, application Japan, Jul. 22, 1981, 56-109561[U]

Int. Cl.[4] B22D *19/12*

U.S. Cl. 164—90 **7 Claims**



4. A method of forming a chain comprising: forming first and second chain element forming die means having their inner surface shaped to form a plurality of interlinked chain elements when said first and second chain element forming die means are closed against one another; inserting die insert means between chain element for forming sections for forming axial posts or one end of each chain element and holes in extrusions formed on each other end of each chain element with the posts fitting the holes; positioning said die insert when said first and second chain element forming dies are closed against one another; inserting angular pins in angular holes formed in one of said chain element forming die means are said die insert means whereby said die inserts are automatically positioned when said first and second chain element forming die means are brought together injecting chain forming material into the closed dies thereby forming a plurality of linked chain elements.

4,641,702

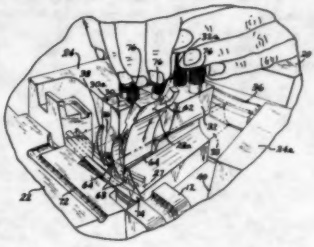
METHOD AND MOLD FOR MOLDING INVESTMENT CASTING PATTERNS OF IRREGULAR SHAPE

John R. Petrenchik, Pepper Pike, Ohio, assignor to Mercury Machine Company, Warrensville Heights, Ohio

Filed Mar. 28, 1985, Ser. No. 716,961

Int. Cl.[4] B22C *7/02*

U.S. Cl. 164—137 **14 Claims**



1. In a method for molding investment casting patterns of irregular shapes comprising providing a die mold defining a die mold cavity for the casting pattern with the die mold being comprised of a plurality of separable mold portions, including intermediate sectional mold cavity insert portions defining arcuate surface sections of the mold cavity, with the defining curvatures of said cavity extending arcuately in generally non-parallel relation, and including the step of removing said die mold insert portions from the pattern after the molding thereof, by moving each of the die mold insert portions through a respective generally arcuate path in a predetermined direction, and with respect to the formed pattern, to accomplish removal of said die mold insert portions without interference with the arcuate surfaces of the formed pattern and thus provide for subsequent removal of the latter from the die mold, said mold cavity insert portions including a first insert portion which includes a concave mold cavity defining section and another insert portion which extends alongside of said first insert portion, with said other insert portion and said first insert portion including complementary arcuate mating surfaces extending generally in said predetermined direction, and including as part of said removal step the step of sequentially moving said first insert portion with respect to said other insert portion through an arcuate path defined in general by said mating surfaces, to accomplish removal of said first insert portion from said die mold and then subsequently moving said other insert portion with respect to the pattern through its said arcuate path away from the die mold and the formed pattern, to accomplish sequential removal of said first and said other insert portions from said die mold and the formed pattern.

4,641,703

COUNTERGRAVITY CASTING MOLD AND CORE ASSEMBLY

Karl D. Voss, Standish; Mark A. Datte, Auburn, and Gary F. Ruff, Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1985, Ser. No. 802,423

Int. Cl.[4] B22D *18/06*

U.S. Cl. 164—255 **4 Claims**

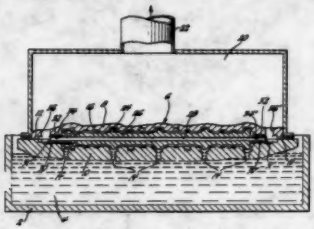
1. Apparatus for the countergravity casting of molten metal comprising:

a mold comprising a porous, gas-permeable upper shell defining a molding cavity and a lower portion secured to said upper shell, said lower portion having at least one gate on the underside thereof for admitting said molten metal to said molding cavity from an underlying pot thereof;

a vacuum chamber overlying said upper shell and sealingly engaging said mold for withdrawing gases from said

molding cavity substantially uniformly through said shell and such as to suck said metal up into said cavity via said gate;

a discrete, hollow, expendable core disposed within said molding cavity to shape said metal thereabout, said core being destined for engulfment and temporary retention by said metal and comprising a porous, gas-permeable, thermally degradable shell defining an evacuation cavity for withdrawing gases from said molding cavity which are formed upon degradation of said core while engulfed by said metal during casting;



an extension on said core, said extension projecting from at least one end thereof and sealingly engaging said mold; and

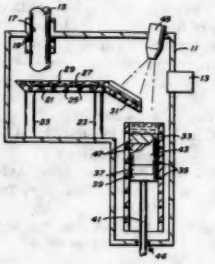
an unobstructed gas flow passage through said extension connecting said evacuation cavity and said vacuum chamber for establishing a pressure in said evacuation cavity casting which is substantially equal to the pressure in said chamber; whereby gases generated by the thermal degradation of said core are withdrawn from said molding cavity into said chamber via said evacuation cavity and passage and occlusion thereof in the metal casting thereby prevented.

4,641,704

CONTINUOUS CASTING METHOD AND INGOT PRODUCED THEREBY

James H. C. Lowe, Moraga, Calif., assignor to Degussa Electronics Inc., Morgan Hill, Calif.

Filed Jan. 25, 1985, Ser. No. 695,173
Int. Cl.[4] B22D *11/22*
U.S. Cl. 164—474 **4 Claims**



1. A method of continuously casting an ingot of a metal alloy of the type having a substantial liquidus-solidus temperature range to produce an ingot with a surface substantially free of hot-tears, comprising:

pouring into a continuous casting mold at a pressure of less than about 10^{-3} Torr, a succession of substantially equal-volume quantities of the molten alloy, each quantity being sufficient to cover the entire cross-section of said mold by flow under the influence of gravity, each quantity being allowed to cool for a period of at least 30 seconds between pours by extracting heat from the last formed increment adjacent the mold substantially only via the mold walls to permit the ingot being formed to be lowered in the mold without tearing the ingot side-wall,

maintaining by substantially continuous electron beam irradiation the entire upper surface of each last poured increment at a temperature at which metallurgical bonding with the next poured increment can occur, and

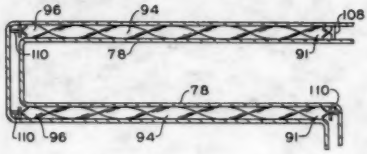
before each successive pouring and after the cooling period, lowering the partially formed ingot in the mold a distance substantially equal to the increment thickness.

4,641,705

MODIFICATION FOR HEAT EXCHANGERS INCORPORATING A HELICALLY SHAPED BLADE AND PIN SHAPED SUPPORT MEMBER

Jeremy W. Gorman, 5 Cedar Hill Rd., West Simsbury, Conn. 06092

Division of Ser. No. 522,033, Aug. 9, 1983, Pat. No. 4,564,066, Continuation-in-part of Ser. No. 287,491, Jul. 29, 1981, abandoned. This application Jun. 24, 1985, Ser. No. 747,965
Int. Cl.[4] F28F *13/02*
U.S. Cl. 165—85 **1 Claim**



1. In a heat exchanger, the combination comprising:

a shell having two ends, an inlet and an outlet for passage of a heat exchange fluid therethrough;

a tube mounted within said shell for external contact by the heat exchange fluid, and adapted for passage of a heat exchange liquid therethrough in physical isolation from the heat exchange fluid, said tube having a bend proximate to one end of said shell;

a generally helical blade disposed within said tube for free rotation and free axial movement, said blade having a laterally centered pointed portion on at least said one end thereof, and being of a diameter, relative to that of said tube, such as to cause said blade to pass in closely spaced relation to the inside surface of said tube during rotation; and

a bearing member adjacent at least one end portion of said blade which comprises an elongated pin shaped member fixed to the corresponding bend of said tube and extending in generally coaxial relation to said tube, said bearing member having a planar head mounted on said elongated pin shaped member, said head being disposed in substantially normal relation to said pin shaped member and engaging and supporting said blade.

4,641,706

VERTICAL SHELL AND TUBE HEAT EXCHANGER WITH SPACER OR CLIP TO FORM UNIFORM THICKNESS FALLING FILMS ON EXTERIOR SURFACES OF TUBES

Timothy J. Haynie, Lockport, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Nov. 5, 1984, Ser. No. 668,409
Int. Cl.[4] F28D *3/00*
U.S. Cl. 165—118 **9 Claims**

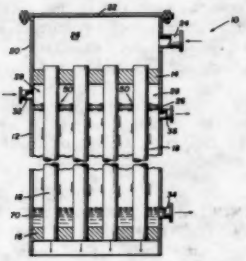
1. An external falling film heat exchanger comprising:

a shell connected to vertically spaced apart horizontally arranged upper and lower tube sheets;

a plurality of vertically positioned parallel tubes, with each tube extending through and sealingly connected to a hole in each tube sheet;

a distribution plate spaced below the upper tube sheet and sealingly connected to the shell thereby forming a liquid distribution space between the distribution plate and the upper tube sheet, with said parallel tubes extending through oversized walled holes in the distribution plate;

at least three vertically positioned, horizontally spaced apart



elongated spacers in each oversized hole, with each spacer substantially in contact with and independent of both the adjacent tube and the hole wall thereby maintaining the tube in fixed position relative to the hole wall;

means to feed a liquid to the distribution space and means to withdraw the liquid as liquid or vapor from the shell side of the heat exchanger; and

a liquid distribution box positioned above the upper tube sheet and means to deliver a liquid to the liquid distribution box.

4,641,707

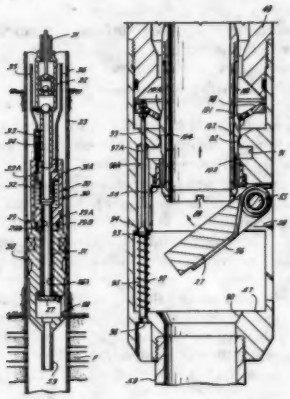
WELL APPARATUS

Neil H. Akkerman, Houston, Tex., assignor to AVA International Corporation, Houston, Tex.

Filed Oct. 22, 1984, Ser. No. 663,713

Int. Cl.[4] E21B *33/12, 34/10*

U.S. Cl. 166—116 **21 Claims**



1. Well apparatus, comprising a lower tubular body having a bore therethrough and adapted to be lowered into a well bore, packer means and anchor means carried about the lower tubular body and adapted to be expanded into sealed and anchored positions, respectively, with the well bore, when the lower body is disposed in a desired position therein, a flapper mounted on the lower body for pivoting between positions opening and closing the bore therethrough, means yieldably urging the flapper toward closed position, and an upper tubular body having a bore therethrough and adapted to be lowered into the well bore and supported on the lower body with its bore forming a continuation of the bore through the lower body and a lower continuation of the lower end of well tubing suspended within the well bore, means for releasably connecting the upper body to the lower body when so supported, a flow tube extending longitudinally within the bores of the upper and lower bodies and through the packer and anchor means, when lower bodies are so connected, for reciprocation between an upper position in which its lower end is above the flapper to permit it to close and a lower position in which its lower end moves the flapper to open position, means on the upper body for moving the flow tube between its upper and lower positions, including spring means yieldably urging the flow tube toward its upper position, piston means responsive to the supply thereto of hydraulic control fluid from a remote source for moving the flow tube toward its lower position whereby said flapper closes automatically in response to the exhaustion of control fluid, and means in the lower body automatically responsive to movement of said flow tube toward its lower position for connecting the bore of the lower body above and below the flapper before the flapper is opened.

9. A subsurface safety valve, comprising tubular body means having a bore therethrough adapted to form a continuation of a well string, a seat about the bore, a passageway connecting the bore above and below the seat, a first closure element mounted on the body means for movement between positions opening and closing the bore through the seat, first spring means urging the first closure element to closed position, a second closure element mounted on the body means for movement between positions opening and closing the passageway, second spring means urging the second closure element to closed position, actuator means mounted on the body means and responsive to the supply thereto of hydraulic control fluid from a remote source to move the second closure element from closed to open position, and thereby equalize pressure across the first closure element, and then move the first closure element from closed to open position, and to the exhaust of control fluid therefrom to permit said first closure element to be moved by said first spring means from open to closed position, said second closure element being releasable from said actuator means so that said second closure element may be returned to its closed position by said second spring means, as the first closure element is moved to open position, and said second spring means retaining said second closure element in said closed position, during movement of said first closure member form its open to its closed position upon exhaustion of control fluid from said actuator means.

4,641,708

CASING HANGER LOCKING DEVICE

William D. Wightman, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Sep. 6, 1985, Ser. No. 773,397

Int. Cl.[4] E21B *43/10*

U.S. Cl. 166—208 **4 Claims**

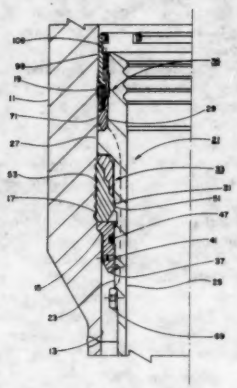
1. In a well assembly having a wellhead with a bore containing an internal landing shoulder formed therein and a plurality of internal grooves located above the shoulder, a casing hanger having a body adaptged to be mounted to the top of a string of casing, an improved locking and supporting means for securing the casing hanger in the wellhead, comprising in combination:

a collar slidably mounted to the exterior of the body, the collar protruding from the body for contacting the landing shoulder as the casing hanger is lowered into the wellhead, the collar being movable relative to the body from a lower storage position to an upper set position which occurs when the collar contacts the landing shoulder and the hanger body continues downward movement;

wedge means located between the collar and the body for

allowing downward movement of the hanger body when the collar contacts the landing shoulder, but resisting upward movement of the hanger body relative to the collar;

a split ring slidably carried by the hanger body with its lower edge in contact with the collar, having grooves on



its exterior adapted to mate with the grooves in the wellhead; and

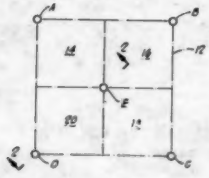
cam means for pushing the split ring outwardly into engagement with wellhead grooves to lock the hanger in the wellhead when the collar contacts the landing shoulder and the hanger body continues downward movement, to move the collar from the storage to the set position.

4,641,709

CONTROLLING STEAM DISTRIBUTION

Maston L. Powers; Christopher J. Dodson, both of Oklahoma City; John S. Moore, Ponca City, all of Okla., and Farhad Ghassemi, Lafayette, La., assignors to Conoco Inc., Ponca City, Okla.

Filed May 17, 1985, Ser. No. 735,795
Int. Cl.[4] E21B *47/00, 43/26*
U.S. Cl. 166—252 **17 Claims**



1. In an enhanced oil recovery method comprising steps of:

(a) providing a pattern of wells, including at least one injection well intersecting an underground oil bearing formation for injecting an injection fluid into an area of said formation surrounding said injection well, and including a plurality of producing wells intersecting said area of said formation for producing oil and other fluids for a plurality of sectors of said areas, each of said sectors being associated with one of said producing wells and defining a portion of said area to be drained by its associated producing well;

(b) injecting injection fluid into said formation through said injection well;

the improvement comprising:

(c) determining an estimated volume of oil in place in each of said sectors, and thus determining a relative oil portion of a total area oil volume which is in place in each of said sectors;

(d) determining a relative injection fluid portion of the total amount of injection fluid being injected into said area which is flowing toward each of said producing wells;

(e) then modifying a production capability of at least one of the group of wells comprising and producing wells and said at least one injection well and thus changing the relative injection fluid portion which stimulates production at least two of said producing wells to more closely approximate stimulation of production at the other production wells responsive to the relative oil portions of the sectors associated with said at least two producing wells; and

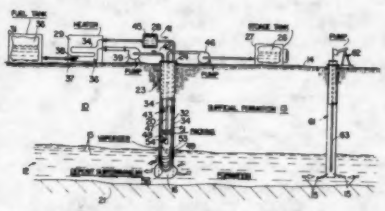
(f) thereby increasing a total volume of oil recovered as compared to the total volume of oil which would have been recovered in the absence of step (e).

4,641,710

ENHANCED RECOVERY OF SUBTERRANEAN DEPOSITS BY THERMAL STIMULATION

Barney Klinger, Santa Barbara, Calif., assignor to Applied Energy, Inc., Vancouver, Canada

Continuation-in-part of Ser. No. 657,683, Oct. 4, 1984, abandoned. This application Feb. 13, 1986, Ser. No. 829,694
Int. Cl.[4] E21B *36/00, 43/24*
U.S. Cl. 166—303 **35 Claims**



1. A method of removing deposits releasable a substance in a vapor phase from a subterranean tion below a surficial formation, comprising in combination the steps of:

providing a hole through said surficial formation to said subterranean formation;

storing said substance at said surficial formation in the form of a liquid convertible at said subterranean formation to said vapor phase;

providing a heating fluid heatable at a surface of said surficial formation remote from said subterranean formation to a temperature sufficient for a conversion of said liquid to said vapor phase at said subterranean formation by a transfer of heat from said heating fluid to said liquid;

heating said heating fluid at said surface of said surficial formation remote from said subtertanean formation to a heated state providing said sufficient temperature and circulating said heating fluid in said hole in a closed circuit extending for said heating fluid at said heated state to said subterranean formation and then back to said surface for repeated reheating at said surface to said heated state providing said sufficient temperature and for recirculation of said heating fluid at said heated state to said subterranean formation;

advancing said convertible liquid to said subterranean formation at said hole;

applying heat from the recirculating heating fluid in said hole to said liquid;

converting said liquid into a vapor by said application of heat from said recirculating heating fluid in said hole, but preserving said heating fluid against combustion and

chemical reaction during said heating, circulation, reheating and recirculation thereof and during said application of heat to, and conversion to said vapor phase of, said liquid, and preserving said heating fluid against escape into said subterranean formation;

driving said vapor into said subterranean formation for releasing said deposits with said vapor; and

removing said released deposits from said subterranean formation.

23. In apparatus for enhanced recovery of deposits releasable by a substance in a vapor phase from a subterranean formation below a surficial formation via a hole through said surficial formation to said subterranean formation, the improvement comprising in combination:

means at said surficial formation for storing said substance in the form of a liquid convertible at said subterranean formation to said vapor phase;

means for heating a heating fluid at a surface of said surficial formation remote from said subterranean formation to a heated state providing a temperature sufficient for a conversion of said liquid to said vapor phase at said subterranean formation by a transfer of heat from said heating fluid to said liquid;

means connected to said heating means for circulating said heating fluid in said hole in a closed circuit extending for said heating fluid at said heated state to said subterranean formation and then back to said surface for repeated reheating at said surface by said heating means to said heated state providing said sufficient temperature and for recirculation of said heating fluid at said heated state to said subterranean formation;

means connected to said storing means for advancing said convertible liquid to said subterranean formation at said hole;

means for applying heat from the recirculating heating fluid in said hole to said liquid and for converting said liquid into a vapor by said application of heat from said recirculating heating fluid in said hole;

means for driving said vapor into said subterranean formation for releasing said deposits with said vapor for a removal of said released deposits from said subterranean formation; and

said heating means, circulating means and said means for applying heat from the recirculating heating fluid to said liquid including means for preserving said heating fluid against combustion and chemical reaction during said heating, circulation, reheating and recirculation thereof and during said application of heat to, and conversion to said vapor phase of, said liquid, and for preserving said heating fluid against escape into said subterranean formation.

4,641,711

TERMINATING PERSISTENT UNDERGROUND COAL FIRES

Ruel C. Terry, 3090 S. High St., Denver, Colo. 80210

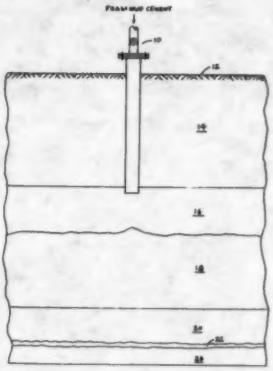
Filed Jun. 4, 1985, Ser. No. 740,980
Int. Cl.[4] A62C *1/12, 3/02*
U.S. Cl. 169—44 **12 Claims**

1. A method of terminating a persistent underground coal fire using foaming mud cement, comprising the steps of

establishing a communication passage between the surface of the earth and the underground cavity associated with the coal,

injecting a first quantity of foaming mud cement through the communication passage and onto the burning coal, wherein the first quantity of foaming mud cement forms a blanket over the burning coal, the foaming mud cement, upon contacting the burning coal generating gases which form vents through the injected foaming mud cement,

terminating injection of the first quantity of foaming mud cement until the generation of gases wanes at the interface between the hot coal and the injected foaming mud cement, with resultant collapse of vents through the foaming mud cement, then



resuming injection with a second quantity of foaming mud cement into the underground cavity.

4,641,712

WEED CUTTER AND EXTRACTOR

Samuel A. Cravotta, 2341 N. Edgewood St., Arlington, Va. 22201

Filed Jan. 11, 1985, Ser. No. 690,585
Int. Cl.[4] A01B *1/16*
U.S. Cl. 172—25 **2 Claims**

1. A weed extractor comprising an elongated main shaft having oppositely disposed ends, one of said ends having a weed extracting member rigidly attached thereto, said member comprising an enlarged cylindrical member secured to said shaft and being split longitudinally and bent to form a plurality of ground engaging tines diverging away from the longitudinal axis of said shaft forming V-shaped slots between each pair of adjacent tines, upper and lower lever arms integral with said shaft, said lever arms extending at right angles to said longitudinal axis of said main shaft, said upper lever arm having an upper extension arm extending vertically therefrom and at a right angle thereto, said upper extension arm being in parallel relationship to said elongated main shaft and supporting a rotatable hand rest and a rotatable hand grip thereon, said lower lever arm formed at a right angle to said elongated main shaft to form a foot rest portion, and having a depending right angled lower extension arm extending therefrom, said depending lower extension arm being coaxial with the upper extension arm and in parallel relationship with said elongated main shaft

and having said rigidly attached weed extracting member at its lower end.

4,641,713

SOIL CULTIVATING MACHINES

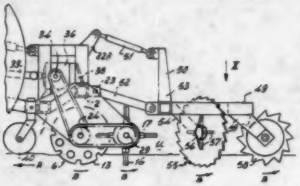
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Jan. 12, 1984, Ser. No. 570,925

Claims priority, application Netherlands, Jan. 17, 1983, 8300154

Int. Cl.⁴ A01B *49/02, 33/04*

U.S. Cl. 172—49 **11 Claims**



1. A cultivating machine for seedbed preparation of dirty soil in the sense of including vegetable matter such as weeds and stubble which comprises forward soil cutting discs and following roller means with projections extending outwardly therefrom, said forward disc and said roller means having parallel horizontal axes of rotation extending normal to their ussual direction of travel, power means interconnected to said roller means and said forward discs for rotating such components about their respective axes through the soil, said forward discs comprising coplanar discs in front of said roller means for slicing the soil into parallel strips, said roller means comprising a roller with said projections extending therefrom between said forward discs for mixing said vegetable matter intimately with the soil in each said strip up to the depth said projections extend from said roller, said roller packing said soil to create soil structure suitable for sowing, and soil displacing means comprising a plurality of further discs having axes of rotation extending obliquely with respect to said usual direction of travel for laterally displacing the soil.

4,641,714

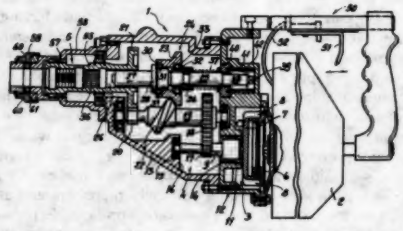
MULTIUSE PORTABLE EQUIPMENT FOR DRIVING ROTATING TOOLS, ROTATING PERCUSSION TOOLS AND PERCUSSION TOOLS

Filippo Ferioli, Via Vallara, 30, 21055 - Gorla Minore (VA), Italy

Filed Apr. 26, 1985, Ser. No. 727,805

Int. Cl.⁴ B25D *11/00*

U.S. Cl. 173—109 **3 Claims**



1. A multiuse portable equipment for driving rotating tools, rotating-percussion tools and percussion tools, comprising a combustion engine, a reduction gear assembly coupled to said combustion engine by a centrifugal clutch system, and a tool post mechanically connected to said reduction gear assembly, said clutch system including a rotatable finned bell rotatably supported at two positions and mounted on a spiral chamber provided with inlet and outlet holes for cooling air, and a percussion assembly effective to act on a tool carried by said tool post, said percussion assembly including a percussion shaft having at one end a percussion member and slidingly carrying at the other end a rotatable cap urged by a spring mounted on said percussion shaft, said cap being able of engaging, to be slidingly displaced on said percussion shaft, with an annular cam supported on a rotatable intermediate shaft, said intermediate shaft further supporting a gear of said reduction gear assembly said gear engaging a further gear of said reduction gear assembly, supported on a further driving shaft effective to rotatively drive said intermediate shaft, said intermediate shaft driving said tool post through a coupling gear assembly, said percussion shaft being idly mounted within an axial cavity of said tool post and having, in correspondence to said cap, a bulge forming, on the side opposite to said percussion member and facing one end of said cap, and together with said cap, a seat effective to receive a plurality of balls for rotatably supporting said cap, said reduction gear assembly ratio being so designed that said percussion member is effective to act on a said tool supported by said tool post with intermittent percussions at a rate of between 3.6 and 4.2 per turn of said tool post.

4,641,715

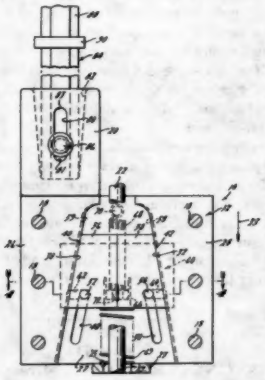
APPARATUS FOR DRIVING AND RETRACTING GROUND RODS OR THE LIKE

Donald B. Stinson, and Arthur A. Orofino, both of Farmington, Mich., assignors to New Product, Inc., Farmington, Mich.

Filed Sep. 23, 1983, Ser. No. 535,042

Int. Cl.⁴ B25D *17/06*

U.S. Cl. 173—129 **15 Claims**



1. An apparatus for forcibly driving or retracting an elongated rod-like member into or out of the ground or the like, said apparatus comprising:

a body including top and bottom force receiving portions for receiving force exerted directly on said body from longitudinally above or below said body; said body including a pair of spaced interconnected abutment members, each of said abutment members having flat internal abutment surfaces angled upwardly so as to converge towards each other from said bottom portion and curving towards each other below said top portion;

a pair of jaw members slidably retained between said abutment surfaces and directly below said top force receiving surface, both of said jaws having a rod enaging surface facing the other of said jaw members and an outer bearing surface angled upwardly from said bottom portion and converging toward each other, the bearing surfaces being

in sliding engagement with said abutment surfaces whereby force applied to said top prorion of said body urges said abutment surfaces over said bearing surfaces of said jaws to force said rod engaging surface against a rod and directly transfer the force thereto;

guide means connected to said body and said jaws for separating said jaw members as said body is forcibly urged upwardly; said guide means including a guide member having a pair of guide slots upwardly angling toward each other, each of said jaws including a projection extending into a respective one of said guide slots to cooperate upon upward movement of said body to separate said rod engaging surfaces of said jaw members;

a slide plate slidably movable relative to said body in said upward and downward longitudinal directions and having at least one generally laterally elongated alignment slot therein, each of said guide members being slidably received in one of said alignment slots for generally lateral movement therein but generally restrained from longitudinal movement relative thereto, said slide plate thereby maintaining said jaw members in said mutual longitudinal alignment;

first resilient biasing means connected to said body and to said slide plate for biasing said jaw members generally in said upward longitudinal direction relative to said body and generally laterally toward one another; and

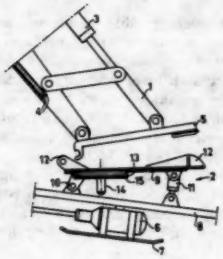
second resilient biasing means connected to said body and connected with said jaw members for resiliently biasing said jaw members generally in said upward longitudinal direction relative to said body and generally laterally toward one another.

4,641,716

METHOD AND EQUIPMENT FOR ROCK DRILLING

Bo A. Själander, Matfors, Sweden, assignor to JCC Johnson Construction Company AB, Sundsvall, Sweden

Filed Jul. 3, 1984, Ser. No. 627,464
Claims priority, application Sweden, Jul. 6, 1983, 8303851
Int. Cl.⁴ E21C *11/00*; E21D *10/00*
U.S. Cl. 175—62 **16 Claims**



11. Drilling equipment for horizontally drilling rocks with a low bench height, said equipment being attachable to a boom of a dredging machine, said equipment comprising:

brackets attachable to said boom;

a first plate attached to said brackets;

a second plate rotatably attached to said first plate, said second plate being rotatable about a first axis which is perpendicular to said first plate;

a plate member rotatably attached to said second plate at a pivot connection;

drilling motor attached to said member;

a drill bit connection extending outward from said drilling motor;

means for positioning the member perpendicular to said first plate; and

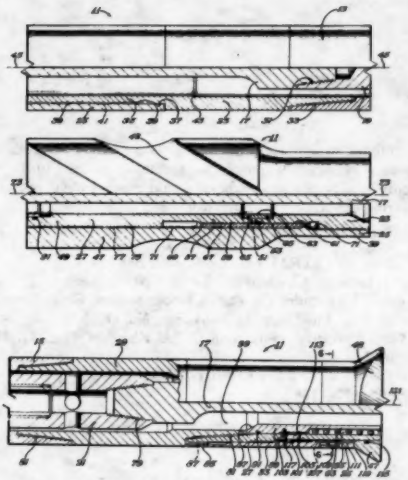
means for rotating the member around said first axis.

4,641,717

CONNECTOR HOUSING

Jay M. Eppink, Spring, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 27, 1985, Ser. No. 813,804
Int. Cl.⁴ F21B *7/08*
U.S. Cl. 175—74 **8 Claims**



1. A connector housing for use in directional drilling, the connector housing comprising:

a top housing, having an angle in the longitudinal axis of the top housing;

a bottom housing, having an angle in the longitudinal axis of the bottom housing, aligned in the same direction as the angle in the longitudinal axis of the top housing;

means for preventing rotation of the top housing and the bottom housing relative to one another;

a center housing, having an angle in the longitudinal axis of the center housing, the angle in the longitudinal axis of the center housing being aligned in a direction other than the opposite direction from the angles in the longitudinal axes of the top and bottom housings for drilling a slanted hole; and

means for rotating the top and bottom housings relative to the center housing to align the angles in the longitudinal axes of the top and bottom housings in the opposite direction from the angle in the longitudinal axis of the center housing for drilling a straight hole.

4,641,718

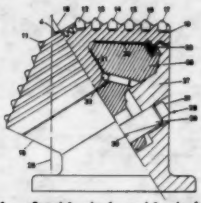
ROTARY DRILL BIT

Ulf A. Bengtsson, Motala, Sweden, assignor to Santrade Limited, Lucerne, Switzerland

Filed May 20, 1985, Ser. No. 735,997
Claims priority, application Sweden, Jun. 18, 1984, 8403242
Int. Cl.⁴ E21B *10/16*
U.S. Cl. 175—331 **9 Claims**

1. Rotary cutter bit having a generally conical envelope surface carrying a plurality of circumferentially extending rows of cutting elements for cutting circular grooves in a working surface of a formation being cut, said cutter bit adapted to be rotatably carried by a bit body, said envelope surface defining a cone extension measured along a circle formed by one said row of cutting elements when said envelope surface is unrolled in the working surface, said cone extension covering only a portion of said circle, said cone

angle exceeding 90° by such an amount that the remaining portion of said circle has a circumferential length whose value is no less than four and no greater than twelve times the pitch of said cutting elements of said one row and being other than



an integer multiple of said pitch, said pitch defined as the distance between centers of adjacently disposed cutting elements in said one row, whereby said cutting elements avoid entering already-formed grooves.

4,641,719

STRAIN GAUGE ASSEMBLIES

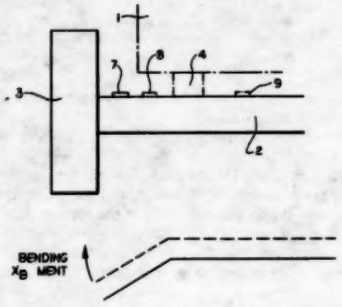
John Harbour, Chippenham, Great Britain, assignor to TRW Probe Electronics Co. Ltd., Gloucestershire, Great Britain

Filed Dec. 13, 1984, Ser. No. 681,232

Claims priority, application United Kingdom, Dec. 17, 1983, 8333679

Int. Cl.⁴ G01G *19/08, 3/14*

U.S. Cl. 177—136 **3 Claims**



1. A strain gauge assembly applied to a mechanical system having a stator and a rotor co-axially carried thereby, the rotor and stator being subject to loads in opposite directions transverse to the axis but offset from one another along the axis, and there being variable torsional loads about said axis between the stator and the rotor, wherein two strain gauge sensors, each providing a balanced bridge circuit are fitted to the stator between the rectilinear load vectors, one being bisected by the plane containing the common axis and said vectors and being oriented to respond to shear strain produced by torque only, and the other being offset to one side of said plane, parallel therewith, and oriented to respond to the shear strain produced by a combination of torque and loading parallel to said two directions.

4,641,720

MOTORIZED WHEEL CHAIR

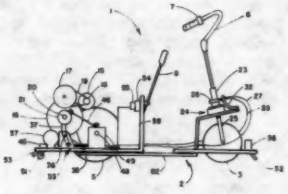
Alva L. Young, 112 Greenleaf Blvd., Morgan City, La. 70380

Filed Mar. 8, 1985, Ser. No. 709,766

Int. Cl.⁴ B62D *11/08*

U.S. Cl. 180—6.24 **1 Claim**

1. A motorized wheel chair for small children, comprising;
(a) a chassis;
(b) a front wheel, rotatably mounted on said chassis;
(c) a right rear wheel, rotatably mounted on said chassis;
(d) a left rear wheel, rotatably mounted on said chassis;
(e) a steering means, mounted on said chassis and connected to said front wheel, for turning said front wheel;
(f) a gear reduction means, for limiting the speed of said wheel chair, mounted on said chassis;
(g) a drive shaft, rotatably connected to said gear reduction means, said drive shaft having a left friction drive roller and a right friction drive roller fixedly attached thereto such that said left and right friction drive rollers are engageable with said left and right rear wheels, respectively;
(h) an electric motor, driveably connected to said gear reduction means such that for every revolution of said drive shaft, said motor will turn a greater number of revolutions;
(i) a throttle means, for controlling the speed of said motor, connected to said motor;
(j) a shift means, for controlling the direction of said motor, connected to said motor;
(k) a power source, mounted on said chassis and connected to said motor;
(l) a seat, mounted on said chassis; and
(m) a clutch means, for selectively operating only said left rear wheel during a right turn and only said right rear wheel during a left turn, said clutch means being connectable between said steering means and said drive shaft said clutch means further comprising:



i. a right steering cable, connected at one end to said steering means, and at the other end to a right clutch lever;
ii. a right clutch lever pivotally attached to said chassis, attached to said right steering cable and attached to said drive shaft such that, during a right turn, said right friction drive roller is urged away from said right rear wheel;
iii. a left steering cable, connected at one end to said steering means, and at the other end to a left clutch lever; and
iv. a left clutch lever pivotally attached to said chassis, attached to said left steering cable and attached to said drive shaft such that, during a left turn, said left friction drive roller is urged away from said left rear wheel; and wherein said gear reduction means is flexibly mounted to said chassis such that, upon an application of force, said gear reduction means may twist slightly on an axis generally perpendicular to said chassis and then return to its original position upon the release of said force.

4,641,721

MOTORCYCLE

Ken Yamaguchi, Hidakamachi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Sep. 26, 1985, Ser. No. 780,579

Claims priority, application Japan, Oct. 5, 1984, 59-151062[U]

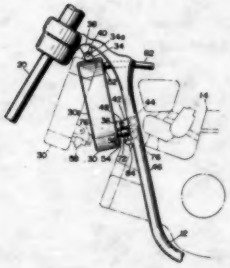
Int. Cl.⁴ B60K *11/04*

U.S. Cl. 180—229 **3 Claims**

1. A motorcycle comprising:
a frame having a front portion;
a front fork connected to said frame for supporting a front wheel and disposed in opposed relation to said front portion of said frame;
an engine mounted on said frame;
a radiator for connection to a fluid circulating system operatively associated with said engine for cooling a circulating fluid flowing through said circulating system, said radia-

tor including a generally vertically-disposed body pivotally connected at an upper portion thereof to said front portion of said frame for angular movement between an operative position where said radiator body is disposed adjacent to said front portion of said frame and an inoperative position where said radiator body is away from said front portion, said radiator having an inlet for introducing said circulating fluid thereinto and an outlet for discharging said circulating fluid therefrom;

retaining means formed on said front portion of said frame



and disposed at a level lower than said upper portion of said radiator body, said retaining means being engageable with said radiator body when said radiator body is in its operative position to releasably hold said radiator body against angular movement; and

a valve operatively connected to said outlet and operable to be closed to prevent said fluid from flowing therethrough.

4,641,722

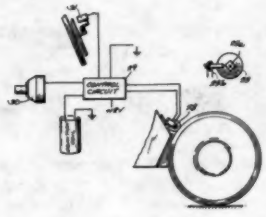
CONTROL CIRCUIT TO INHIBIT HARMFUL TRANSMISSION SHIFTING

Dale C. Bluvstein, North 104, West 20670 Willow Creek Rd., Colgate, Wis. 53017

Filed Sep. 12, 1985, Ser. No. 775,499

Int. Cl.[4] B60K *20/02*

U.S. Cl. 180—271 **21 Claims**



1. A control circuit for regulating the ignition power of a vehicle to inhibit direction changing shifting of the vehicle transmission while the vehicle is in motion, comprising motion sensing circuit means for generating a vehicle motion signal when the vehicle is in motion, transmission sensing circuit means for generating a transmission neutral signal when the vehicle transmission is in neutral, and ignition circuit control means connected to said motion sensing circuit means and said transmission sensing circuit means for receiving said vehicle motion signal and said transmission neutral signal, and operable for interrupting the vehicle engine ignition power when an operator shifts the transmission into neutral while the vehicle is in motion.

4,641,723

HANDLE SWITCH ASSEMBLY FOR A MOTOR VEHICLE

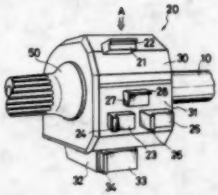
Masami Takanashi, Yokohama, and Akihiro Komatsu, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,357

Claims priority, application Japan, Jun. 23, 1982, 57-93892[U]; Jun 23, 1982, 57-93894[U]; Jun. 23, 1982, 57-93895[U]

Int. Cl.[4] B60K *26/00*

U.S. Cl. 180—315 **3 Claims**



1. A handle switch assembly for a motor vehicle having a bar-like member with handle grips, comprising:

a switch housing mounted on said handle member adjacent to said handle grip;

at least two push button switch elements housed in said switch housing;

push buttons connected to each of said push button switch elements, wherein said push buttons are disposed in a manner that distances between an end of each of said push buttons on the side of said handle grip and said handle grip differ from one another, and said push buttons are respectively provided with a protrusion on a head portion thereof, said protrusion being formed on an end of said head portion, said end of head portion being located away from a central portion of a body of said push button switch element; and

one of said push buttons which is located in an upper part of said switch housing is provided with said elongated protrusion in an upper peripheral portion of said head portion, and another one of said push buttons which is located in a lower part of said switch housing is provided with said elongated protrusions on a side of peripheral portion of said head portion thereof close to said handle grip.

4,641,724

FRACTURE DETECTION USING CIRCUMFERENTIAL OFFSET ACOUSTIC PATHS

Edward Y. Chow, Danbury, and Robert L. Kleinberg, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jul. 6, 1983, Ser. No. 511,415

Claims priority, application United Kingdom, Jul. 30, 1982, 8222033

Int. Cl.[4] G01V *1/40, 1/00;* **E21B** *49/00*

U.S. Cl. 181;104 **11 Claims**

1. An apparatus for investigating an earth formation traversed by a borehole with circumferentially traveling acoustic energy, comprising:

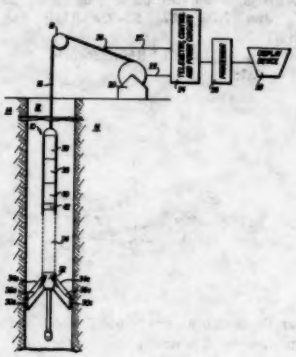
a sonde body;

a first transducer pair including a first acoustic source for applying acoustic energy to the formation and a first acoustic receiver spaced from said first source by a distance, for detecting acoustic energy traveling circumferentially along a first path between said first source and said first receiver;

a second transducer pair including a second acoustic source for applying acoustic energy to the formation and a second acoustic receiver spaced from said second source by a distance essentially equal to the distance between said

first source and said first receiver, for detecting acoustic energy traveling circumferentially along a second path between said second source and said second receiver and of essentially the same length as said first path;

means for maintaining said first and second transducer pairs substantially in a plane transverse to the axis of said sonde



body, and the first transducer pair at a predetermined circumferential offset relative to the second transducer pair, whereby said first path overlaps said second path for a substantial portion thereof; and

means for comparing respective waveforms produced by said first and second receivers.

4,641,725

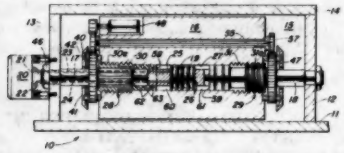
WIDE DYNAMIC RANGE HYDRAULIC VIBRATOR

Jack H. Cole, and Delbert W. Fair, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Aug. 27, 1984, Ser. No. 644,487

Int. Cl.[4] G01V *1/04;* H04R *1/02, 11/00;* F01B *31/14*

U.S. Cl. 181—119 **6 Claims**



1. Apparatus for incremental cylinder length control in a hydraulic vibrator having a reaction mass with a cylinder bore disposed therein, said cylinder bore having first and second ends, first and second end sleeve means disposed in sealed movable position in each of said first and second ends of said cylinder bore, respectively, piston rod means sealed and slidably disposed through said first and second end sleeve means and including a piston disposed in said cylinder bore attached to said piston rod means, said incremental cylinder length control comprising:

first and second thread means formed in each of said first and second ends of said cylinder bore and extending toward said piston;

mating thread means formed in said first and second end sleeve means for moving said end sleeve means toward or away from said piston means upon relative rotation between said thread means and said mating thread means; and

drive means for providing relative rotation of said first and second thread means and said mating thread means, relative rotation of said first and second threaded means and said mating threaded means in one direction moving said end sleeve means toward said piston and opposite direction rotation moving said end sleeve means away from said piston;

said drive means including motor means having an output for generating a rotative force to move said end sleeves in response to change in a vibration frequency of the reaction mass with respect to said piston.

4,641,726

COMPOSITE STRUCTURE AND METHOD OF MANUFACTURING IT

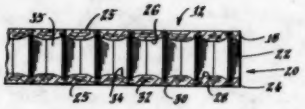
William W. Fearon, Worthington, and Arnel M. Macy, Columbus, both of Ohio, assignors to Peabody Noise Control, Inc., Dublin, Ohio

Continuation of Ser. No. 486,944, Apr. 20, 1983, Pat. No. 4,522,284. This application Feb. 6, 1985, Ser. No. 698,803

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.[4] E04B *1/82*

U.S. Cl. 181—292 **13 Claims**



1. A composite panel structure having acoustical absorbing properties comprising:

a honeycomb core having structure means forming cells having a polygonal cross-section and being open to at least one side of the core; and

an acoustically semi-transparent facing of fibrous material formed to provide a relatively hard outer surface of partially bonded fibers with interstices therebetween, the facing being non-homogeneous and bonded to the structure means at said open face of the core, the facing having portions extending into the adjacent open cells of the core to a depth sufficient to provide a mechanical interlock between the facing and the core, said portions of the facing partially filling the adjacent open cells of the core being relatively soft to enhance absorption of acoustic energy directed upon the facing.

4,641,727

ELECTRICALLY INSULATED TEMPORARY AERIAL PLATFORM

Marvin D. McKelvy, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed May 12, 1986, Ser. No. 861,835

Int. Cl.[4] A45F *3/26;* E04G *5/08*

U.S. Cl. 182—46 **6 Claims**

1. A work platform assembly for temporary use by a lineman on or around utility poles, said platform assembly comprising:

a work platform presenting an elongated surface where said lineman may stand, sit or kneel; and

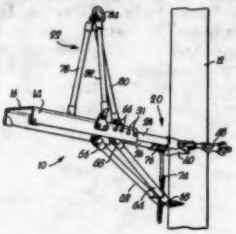
means for temporarily attaching said platform to a utility pole or the like, including

an elongated electrically insulative member secured to and extending from said platform; and

connection structure secured to the end of said insulative member remote from said platform for securing the member and platform to said pole or the like,

said insulative member being of a length, and being formed of an insulative material presenting a smooth outer surface, for resisting accumulation of dirt thereon and maintaining said platform electrically insulated from said connection structure during normal working conditions,

said insulative member further presenting a downwardly sloping upper surface in order to dissuade said lineman



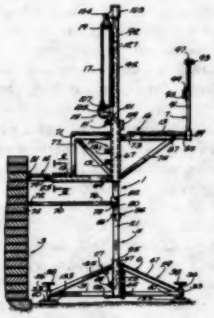
from directly contacting and supporting himself on the member.

4,641,728

SCAFFOLD SYSTEM

Raymond T. McCabe, R.F.D. 2, Inlet Oaks, Delavan, Wis. 53115

Filed Mar. 22, 1985, Ser. No. 714,911
Int. Cl.[4] E04G 1/20
U.S. Cl. 182—146 **8 Claims**



1. A scaffold system comprising:

a. a plurality of towers, each tower comprising:

i. an upstanding mast defining a plurality of equal, vertically spaced openings therein; and

ii. a base for vertically receiving the mast, the base having a fixed leg and two legs adapted to swing between an operative mode wherein the two swingable legs cooperate with the fixed leg to support the tower and a collapsed mode wherein the two swingable legs are parallel and adjacent to the fixed leg;

b. a bracket adapted to be guided and supported for vertical movement on each tower, the bracket having a main member defining at least one opening therethrough for communicating with the spaced openings in the mast; and

c. safety latch means mounted to each bracket main member for engaging the mast openings to prevent the platform from uncontrolled movement along the tower, and

wherein the safety latch means comprises:

d. at least one first tube joined to the bracket main member at right angles thereto over the opening defined in the bracket main member, the tube defining a pair of diametrically opposed longitudinal slots;

e. a plunger having a leading edge disposed in the tube for reciprocation therein and a cam surface facing upwardly to assist in upward adjustment of said scaffold;

f. spring means retained in the tube for biasing the plunger leading edge through the main member opening and against the mast; and

g. a handle extending transversely through the plunger and tube slots,

so that when the bracket is positioned on the mast with the safety latch plunger aligned with a mast opening the plunger enters the mast opening to prevent movement of the bracket on the mast and

wherein said latch includes:

h. a second tube vertically spaced from the first tube at a distance less than the spacing of said plurality of said vertically spaced openings, and joined to the bracket main member at right angles thereto over a second opening therethrough, the second tube defining a pair of diametrically opposite longitudinal slots, each slot having a diametrically opposed circumferential notch;

i. a plunger having a leading edge disposed in the tube for reciprocation therein;

j. spring means retained in the tube for biasing the plunger leading edge through the main member opening and against the mast; and

k. a handle extending transversely through the plunger and tube slots, the handle being located at a location aligned with the tube notches when the plunger leading edge is withdrawn from the opening in the bracket main member,

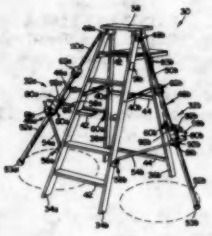
so that the plunger may be locked in an inoperative position by engaging the handle in the tube notches to prevent reciprocation of the plunger and thereby prevent the plunger from entering an opening in the mast.

4,641,729

METHOD AND APPARATUS FOR STABILIZING A LADDER

Andrew C. Beck, and Shirley E. Beck, both of 2204 Tall Oaks Trail, Edmond, Okla. 73034

Filed Oct. 31, 1985, Ser. No. 793,661
Int. Cl.[4] E06C 1/22, 5/36
U.S. Cl. 182—172 **16 Claims**



1. A ladder stabilizer for a ladder having first and second uprights suitable for resting on a ground surface, comprising:

(a) a stabilizer member having a top portion and a bottom portion, wherein the bottom portion is suitable for engaging the ground surface;

(b) means for pivotally connecting the top portion of the stabilizer member to the ladder;

(c) first adjusting means for operatively connecting the stabilizer member to the first upright; and

(d) second adjusting means for operatively connecting the stabilizer member to the second upright, wherein the stabilizer member can be laterally adjusted to vary the distance between the bottom portion of the stabilizer member and the ladder, wherein:

(i) the first adjusting means comprises a first adjusting element pivotally connected to the first upright and means for slidably connecting the first adjusting element to the stabilizer member;

(ii) the second adjusting means comprises a second adjusting element pivotally connected to the second upright

and means for slidably connecting the second adjusting element to the stabilizer member;

(iii) the stabilizer member comprises a central portion between its top and bottom portions, and wherein the first and second adjusting elements are slidably connected to the stabilizer member's central portion;

(iv) the means for slidably connecting the adjusting elements to the stabilizer member each comprise an adjusting element lock assembly operatively connected to the stabilizer member and the respective adjusting element, wherein when the adjusting element lock assemblies are released the stabilizer member can be laterally adjusted, and when the adjusting element lock assemblies are activated the stabilizer member is laterally fixed; and

(v) each adjusting element lock assembly comprises:

(A) a lock housing operatively connected to the stabilizer member;

(B) stationary means for gripping the associated adjusting element;

(C) movable means for gripping the associated adjusting element, wherein the gripping elements are operatively connected to the associated lock housing and are configured to receive the associated adjusting element; and

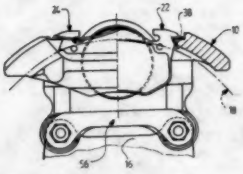
(D) means for urging the movable gripping means toward the stationary gripping means, wherein when the urging means are activated the gripping means engage their respective adjusting elements, thereby laterally fixing the stabilizer member, and wherein when the urging means are released the adjusting elements can freely slide through their associated lock housings and the stabilizer member can be laterally adjusted.

4,641,730

ASSEMBLY COMPONENT FOR A DISC BRAKE

Michel Lombardi, Villepinte, and Jean-Louis Gerard, Paris, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed May 15, 1985, Ser. No. 734,631
Claims priority, application France, May 23, 1984, 84 08053
Int. Cl.[4] F16D *65/02*
U.S. Cl. 188—73.45 **10 Claims**



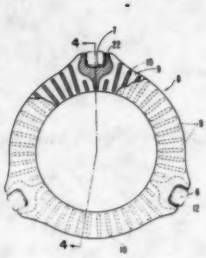
1. An assembly component for a disc brake of the type including a caliper sliding on a fixed support by means of two axial pillars each including a cylindrical sleeve and a removable portion, one pillar end of each pillar including a thread for fixing the pillar to the fixed support and the other pillar end rotatable by a suitable mounting tool, characterized in that the assembly component comprises a channel with parallel component sides, one component side including locking portions cooperating with the sleeves and fixing firmly the assembly component to the sleeves and the other component side carrying tapped components cooperating with the removable portion, and a central component portion straddling the fixed support.

4,641,731

DISC BRAKE FOR MOTORCYCLES

Takeshi Kawaguchi, Saitama; Tsuguya Suzuki, Tokyo, and Katsuhiro Shibata, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 441,911, Nov. 15, 1982, abandoned.
This application Apr. 21, 1986, Ser. No. 857,389
Claims priority, application Japan, Nov. 13, 1981, 56-181096
Int. Cl.[4] F16D *65/12*
U.S. Cl. 188—218 XL **6 Claims**



1. A motorcycle including a front wheel with a brake comprising

a hub in the wheel having equally spaced bosses projecting from the side of said hub, each of said bosses having two sides parallel to a radial line of said wheel;

a brake disc mounted on said hub including

spaced parallel plates, and

a plurality of radial ribs connecting said plates, said plates defining radially extending cooling passages therebetween;

pairs of aligned projections at the outer periphery of said spaced plates forming a recess therebetween, said recess having two sides parallel to a radial line of said disc;

a solid member positioned between said plates at each pair of projections, said solid member formed as a rib having an enlarged rib end portion forming a wall continuously about said recess, said solid member including portions on each side of said recess wider than any said radial rib; and

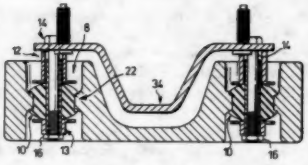
a cover at the end of each boss to support said disc in an axial position against said hub, said cover offering no resistance to radial movement of said disc, said disc mounted on said hub with each of said recesses engaging a boss, said sides of said recess slidably engaging said sides of said boss for radial heat expansion movement of said disc.

4,641,732

DAMPING STRUCTURE

Gordon J. Andry, Windsor, Canada, assignor to Fabricated Steel Products, division of Indal Limited, Windsor, Canada

Filed Apr. 25, 1985, Ser. No. 726,986
Claims priority, application Canada, May 1, 1984, 453264
Int. Cl.[4] F16F *7/10*
U.S. Cl. 188—379 **3 Claims**



1. A vibration damper suitable for dampening the amplitude of omnidirectional vibration in an automotive drive line having

means for adjusting the frequency of vibration for which the vibration damper is effective is provided, comprising an inertial weight of a mass suitable to be effective as a tuned energy absorber having at least one suitably placed bore therethrough to receive a frictionally interfacing disc of readily compressible elastomeric material secured at its circumference only to the walls of the bore and secured to means for securing the vibration damper to only one vibrating mass, said disc of readily compressible elastomeric material provided with an aperture therethrough, said aperture having an axis substantially concentric to that of the bore in the inertial weight; the disc of readily compressible elastomeric material bracketed by two cups spaced at opposite ends of the at least one bore through the inertial weight, each cup substantially comprising an annular wall carrying a concentric flange at one end thereof proximate the disc of readily compressible elastomeric material and having an aperture therethrough, a threaded bolt communicating through the aligned apertures in the cups and the disc of readily compressible elastomeric material and threaded into a prevailing torque nut adjustably securing the cups together to permit the cups to be adjustably moved towards one another compressing the disc of readily compressible elastomeric material and adjustably moved away from one another decompressing the disc of readily compressible elastomeric material, the mass of the inertial weight being considerably greater than the disc of readily compressible elastomeric material; and, suitable fastening means for mounting the damper to only one vibrating mass whereby the said fastening means for mounting the damper to only one vibrating mass communicates between the only one vibrating mass and the disc of readily compressible elastomeric material.

4,641,733

DISABLING DEVICE FOR A BRAKE CONTROL DEVICE

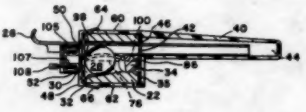
Alistair G. Taig, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Feb. 27, 1985, Ser. No. 706,210

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.[4] B60K *41/24*

U.S. Cl. 192—13 A **10 Claims**



5. An improved brake control device wherein a vehicle includes a brake pedal and a clutch pedal, the brake control device comprising a housing fixedly disposed to the vehicle and defining an opening therein, a connecting member carried within the opening and operatively coupled to the brake pedal, a linkage assembly extending into the opening and operatively coupled to the clutch pedal, and locking means carried within the opening to automatically lock the connecting member to the housing when the clutch pedal is depressed and the vehicle disposed on an incline, characterized in that said improved brake control device includes means for preventing said locking means from operating so that said locking means does not automatically lock when the clutch pedal is depressed and the vehicle disposed on an incline, the locking prevention means comprising electromagnetic means for exerting an electromagnetic force upon said locking means in order to prevent said automatic locking.

4,641,734

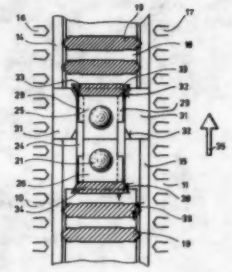
SYNCHRONIZING MECHANISM FOR CLUTCHES

Erich Müller, Kornwestheim; Rühle Günter, Bietig, and Wilhelm Stocker, Oberstenfeld, all of Fed. Rep. of Germany, assignors to Getrag Getriebe-und Zahnradfabrik GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed May 15, 1984, Ser. No. 610,344

Int. Cl.[4] F16D *23/06*

U.S. Cl. 192—53 F **13 Claims**



1. A synchronizing mechanism for a clutch which is particularly useful for a transmission of a motor vehicle, comprising

a rotary axial shaft,

at least one gear rotatable coaxially relative to said shaft,

a guide sleeve connected to said shaft so as to be rotatable therewith,

said guide sleeve having external toothing thereon,

a gear shift sleeve having internal toothing meshing with the external toothing on said guide sleeve and providing for axial sliding movement of said gear shift sleeve along said guide sleeve while said gear shift sleeve is rotatable with said guide sleeve,

said gear including a clutch body having external clutch toothing for selective meshing with said internal toothing on said gear shift sleeve,

a synchronizing ring coaxial with said shaft and having form-locking engagement with said gear shift sleeve for rotation therewith while providing for limited angular movement relative thereto,

said synchronizing ring being frictionally engageable with said clutch body,

first spring detent means and a first pressure body disposed between said gear shift sleeve and said synchronizing ring for initially pressing said synchronizing ring axially into frictional engagement with the clutch body upon initial axial movement of said gear shift sleeve from its initial neutral position toward said gear,

the frictional engagement causing the synchronizing ring and the gear shift sleeve to be brought to a rotary speed substantially synchronous with the rotary speed of the gear,

means on the gear shift sleeve and the synchronizing ring forming sloping check faces which come into contact as the gear shift sleeve is being brought into synchronism with the gear,

the check faces then being slidable axially and circumferentially to escape from each other so as to provide for synchronous meshing of the internal toothing on said gear shift sleeve with the external clutch toothing of the clutch body on the gear,

a second pressure body having form-locking engagement with the gear shift sleeve whereby the pressure body is rotatable therewith,

and second spring detent means disposed between the gear shift sleeve and the second pressure body for causing axial movement of the second pressure body with the gear shift sleeve until the second pressure body comes into engage-

ment with the synchronizing ring and exerts pressure against the synchronizing ring to maintain the frictional engagement between the synchronizing ring and the clutch body,

the second pressure body having an initial axial spacing from the synchronizing ring when the gear shift sleeve is in its initial position,

such initial axial spacing being substantially equal to the axial distance which must be traveled by the gear shift sleeve to produce the axial movement between the check faces whereby the check faces escape from each other,

so that the second pressure body engages the synchronizing ring and exerts axial pressure thereon to maintain the synchronizing ring in frictional engagement with the clutch body when the check faces escape from each other,

so as to prevent loss of synchronism when the internal toothing on the gear shift lever is moving into mesh with the external clutch toothing of the clutch body on the gear.

4,641,735

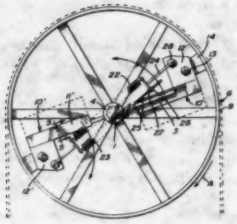
OVERLOAD CLUTCH WITH AUTOMATIC RESET

Gérard Couture, P.O. Box 8, Greenlay, Quebec, Canada

Filed May 30, 1985, Ser. No. 739,103

Int. Cl.[4] F16D *43/20*

U.S. Cl. 192—56 L **3 Claims**



1. A clutch comprising a driven shaft, a first bar fixed to said shaft, extending radially thereof and having a radially outer end, a driving wheel coaxially mounted relative to said driven shaft for rotation in a given rotational direction, an L-shaped first pawl having an elongated, straight, main inner end portion, and a transverse outer end portion, said first pawl pivotally carried by said driving wheel at its outer end portion for pivotal movement of said first pawl about a pawl pivotal axis in a plane generally parallel to said driving wheel between a bar-engaging position and a bar-releasing position, said main portion, when in said bar-engaging position, extending from said outer end portion generally radially inwardly towards said shaft and abutting against said first bar, said first pawl pivoting radially outwardly to clear the radially outer end of said first bar during passage from said bar-engaging position to said bar-releasing position, bias means biasing said first pawl to said bar-engaging position, and wherein in said bar-engaging position, said outer end portion extends from said elongated main portion in a direction opposite said given rotational direction, a radial line passing through said shaft axis and pawl pivotal axis defining on each side thereof in the rotational plane of said wheel, a leading area and a trailing area relative to said given rotational direction, the center of gravity of said pawl being located in said leading area when in bar-engaging position and being located in said trailing area in said bar-releasing position, whereby centrifugal force exerted on said pawl assists said biasing means to keep said pawl in bar-engaging position and a overload exerted by said driven shaft causes pivotal movement of said pawl to bar-releasing position and said pawl is maintained by centrifugal force in said bar-releasing position against bias of said biasing means, said biasing means returning said pawl to bar-engaging position upon sufficient decrease of the rotational speed of said driving wheel.

4,641,736

FRICTION CLUTCH

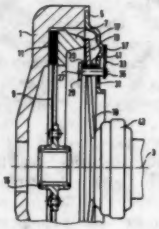
Andreas Förster, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 18, 1986, Ser. No. 840,887

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1985, 3510053

Int. Cl.[4] F16D *13/44*

U.S. Cl. 192—89 B **16 Claims**



1. A friction clutch, comprising

(a) a flywheel rotatable about a rotation axis,

(b) a clutch cover secured to the fly-wheel,

(c) a presser plate guided non-rotatably but axially movably in relation to the fly-wheel,

(d) a clutch disc arranged axially between the fly-wheel and the presser plate,

(e) a diaphragm spring substantially of annular disc form clamped in between the clutch cover and the presser plate, which spring abuts in the region of its external circumference on the presser plate,

(f) an annular, axially acting plate spring coaxially surrounding the rotation axis and being arranged on the side of the clutch cover axially remote from the diaphragm spring,

(g) several retaining bolts arranged radially within the external circumference of the diaphragm spring on a circle concentric with the rotation axis with spacing from one another and movable in relation to the diaphragm spring and the clutch cover substantially in the direction of the rotation axis, each of said retaining bolts being supported with a first end on the side of the diaphragm spring facing axially towards the presser plate and with a second end through said plate spring on the side of the clutch cover axially remote from the diaphragm spring, all of the retaining bolts being secured in common to the plate spring.

4,641,737

BI-DIRECTIONAL OVERTRAVEL STOP

Gary D. Gillingham, Cherry Valley, and Jeffrey D. Metcalf, Rockford, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 4, 1985, Ser. No. 804,387

Int. Cl.[4] F16D *11/04*

U.S. Cl. 192—141 **29 Claims**

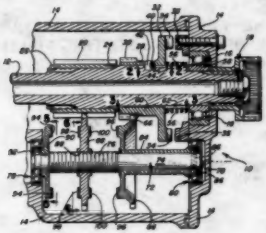
1. An overtravel stop for a rotary shaft, comprising:

a fixed stop;

a following member about the shaft and adapted to rotate with the shaft within its selected travel limit, said following member being associated with a stop member;

a cam structure between the shaft and the stop member, said cam structure being adapted to axially move the stop member into engagement with the fixed stop;

means for engaging the cam structure when the following member rotationally shifts with respect to the shaft; and



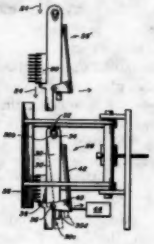
means for rotationally shifting the following member with respect to the shaft when the shaft reaches its travel limit.

4,641,738

MOMENTUM ARRESTING DEVICE FOR AN INTEGRATED CIRCUIT TESTER

Nicholas J. Cedrone, Wellesley Hills, and Kenneth R. Lee, Lincoln, both of Mass., assignors to Daymarc Corporation, Waltham, Mass.

Continuation of Ser. No. 497,208, May 23, 1983, abandoned. This application Nov. 20, 1985, Ser. No. 800,097
Int. Cl.[4] B65G *11/20*
U.S. Cl. 193—40 4 Claims



1. A momentum arresting device for use in an apparatus for testing integrated circuits that are successively dropped along a generally vertical free fall path to a test site, comprising

a plurality of blade members each extending in a generally vertical direction and located adjacent said free fall path with the adjacent faces of said blade members in a mutually spaced relationship along a first horizontal axis perpendicular to said free fall path,

stop members carried on said blade members that each project along a second horizontal axis orthogonal to said free fall path and said first horizontal axis when said blade members are in a first position, said stop members having upper surfaces that are generally horizontally aligned to form a stop surface that precisely locates said free falling integrated circuits at said test site which they impact and come to rest on said stop,

means for repeatedly moving said blades between said first position and a second position where said stop members are clear of said free fall path, and

an elastomeric member that supports said blade members for absorbing the energy of said integrated circuits free falling along said path as they strike said stop members,

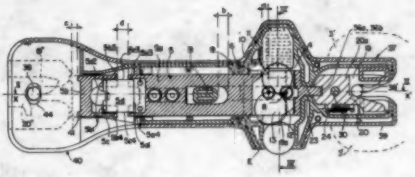
wherein said blade moving means comprises a mounting pin extending generally in the direction of said first horizontal axis that pivotally engages each of said blade members near its upper end and means for reciprocating the lower ends of said blade members in a rotating movement about said mounting pin to move said blade members and said stop members between said first and second positions, wherein said elastomeric member is a sleeve carried on said pin and having a sufficient thickness given the energy absorbing characteristics of the material forming said elastomeric member and given the thickness and mass of said blades to bring said falling integrated circuits to a rapid, bounce-free stop at said test site.

4,641,739

DEVICE FOR LOCKING AND RELEASING OBJECTS INTENDED FOR PUBLIC USE, SUCH AS LUGGAGE CARTS

Jean-Pierre E. Marie, Boulogne-Billancourt, France, assignor to Mors, France

Filed Oct. 4, 1984, Ser. No. 657,528
Claims priority, application France, Sep. 7, 1984, 84 13803
Int. Cl.[4] G07F *17/10*
U.S. Cl. 194—253 5 Claims



1. A device for locking and releasing objects intended for public use, such as luggage carts, including a locking apparatus allowing each object to be automatically locked to an adjacent object or to a fixed point in stowage position and into which a coin can be inserted to allow unlocking of the locking apparatus and releasing of the object by exerting a pull thereon, said unlocking being ensured by said pull,

said locking apparatus including

a casing,

a slide displaceable by said pull,

an internal blocking member for fixing said slide and which is movable to a non-blocking position by coming into contact with an edge of the coin, and

a connecting lock for locking the object to the adjacent object or to the fixed point, said slide serving to lock or unlock said connecting lock connecting the object to the adjacent object or to the fixed point,

wherein said slide is constituted by two portions, a first portion for said locking and unlocking of said connecting lock, a second portion separate from said first portion and located near an endmost portion of said casing of the locking apparatus,

and additionally comprising

an intermediate element housed between said first and second portions forming a housing therefor so as to maintain between said first and second portions of said slide a separating distance substantially equal to slide travel necessary for unlocking said connecting lock, and

means for allowing said first portion of said slide to be displaced by said pull with respect to said second portion over said separating distance, said intermediate element being partially displaceable out of said housing between said first and second portions by said means, thus unlocking the object from the adjacent object.

4,641,740

BOBBIN TUBE MAGAZINE

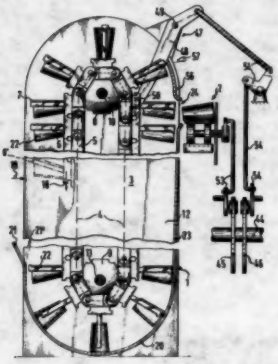
Hans Grecksch; Hans-Werner Schwalm, and Johannes Thomalla, all of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,576

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241032

Int. Cl.⁴ B65G *47/90, 17/06*

U.S. Cl. 198—487.1 **15 Claims**



1. Bobbin tube magazine assembly, comprising:

a bobbin tube feeding device;

a bobbin tube conveyor connected to said bobbin tube feeding device, said bobbin tube conveyor being controlled by said bobbin tube feeding device for discharging bobbin tubes from said bobbin tube conveyor to said bobbin tube feeding device and said bobbin tube conveyor being independently actuatable for circulating bobbin tubes;

said bobbin tube conveyor including:

at least one endless pulling device formed of a plurality of inner and outer transport chains having links, chain wheels for said transport chains, straps each being disposed at an end of a respective one of said chain links, at least one common joint pin passing through a hole formed in said straps of a plurality of said chain links, said joint pin having a support location with an increased diameter for engaging said chain wheels at said outer transport chain, stops formed on said chain links for limiting backward flexing of said transport chain when elongated, slip-on arbors carried by said chain links and protruding from said pulling device, each of said arbors having an end distant from said pulling device for receiving bobbin tubes, said arbors passing through a deflection location during circulation in which said arbors point below the horizontal, as seen in direction toward said ends of said arbors, sliding guides disposed ajacent said ends of said arbors at said deflection location for preventing bobbin tubes from slipping off said arbors, a vane extending over the entire width of said sliding guides, means permitting said vane to move between a first position in which said vane facilitates entry of bobbin tubes at said deflection location and a second position in which said vane pushes bobbin tubes entirely onto said arbors, freely accessible bobbin tube filling location, a bobbin tube discharge location being spaced from said filling location by a distance equal to at least half of the length of said pulling device, in travel direction of said bobbin tube conveyor and a wall disposed between said sliding guides and said discharge location for preventing bobbin tubes from slipping off said arbors;

and a discharge device disposed at said discharge location for discharging bobbin tubes from said bobbin tube conveyor to said bobbin tube feeding device.

4,641,741

PARTS SUPPLYING APPARATUS FOR BUTTON ASSEMBLING AND SETTING MACHINES

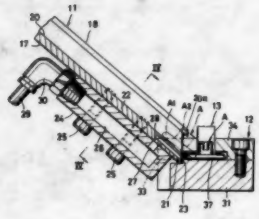
Hiroshi Oura, Kurobe, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1984, Ser. No. 657,497

Claims priority, application Japan, Oct. 4, 1983, 58-154056[U]

Int. Cl.⁴ B65G *47/22*

U.S. Cl. 198—493 **2 Claims**



1. An apparatus for supplying parts one at a time to working station in a button assembling and setting machine, said apparatus comprising:

(a) a base having a substantially horizontal guide groove for the passage of the parts, said guide groove having an open end disposed adjacent to the working station;

(b) an inclined chute including an elongated chute body of a generally U-shaped cross section, said chute body having a longitudinal guide track joined transversely with said guide groove for delivering the parts one at a time into said groove, and a bottom wall defining part of said guide track, said guide track having a discharge end communicating with said guide groove, said bottom wall having a discharge end wall disposed on said base and facing toward said guide groove;

(c) means for feeding a part which has fallen into said guide groove, along the latter through said open end to the working station; and

(d) an exhaust nozzle disposed in said bottom wall, extending along said guide track and opening at said discharge end wall in a direction substantially the same as the direction of movement of the part along said guide track for ejecting compressed air therefrom against the underside of the part to lift it up when the part moves across a junction between said guide track in said inclined chute and said substantially horizontal guide groove in said base, thereby letting the part move past said junction into said groove.

4,641,742

ARTICLE TRANSFER APPARATUS

Makoto Igarashi, Tokyo; Kiichiro Okano, Chiba, and Naoki Kumagami, Sagamihara, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 599,927

Claims priority, application Japan, Apr. 13, 1983, 58-65029

Int. Cl.⁴ B65G *15/20*

U.S. Cl. 198—627 **8 Claims**

1. An article transfer apparatus comprising:

(a) first and second conveyor means having driving shafts, each conveyor means having at least a driving sprocket, a free sprocket, an endless chain extending partially around and between the driving sprocket and the free sprocket, and a plurality of stops arranged at regular intervals on the endless chain for engaging articles, the stops on one chain being used for engaging the front ends, and the stops on

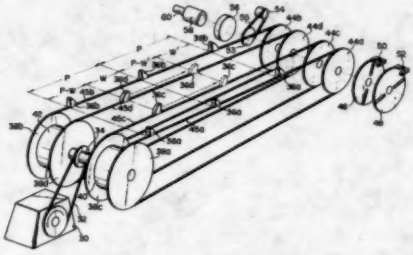
the other chain being used to engage the rear ends, of the articles;

(b) first clutch means connecting the driving sprockets of the first and second conveyor means such that the conveyors are drivingly interconnected when the clutch is engaged and relative movement between the conveyor means is permitted when the clutch is disengaged;

(c) a main motor drive means drivingly connected to the drive sprocket of the first conveyor means;

(d) a servomotor;

(e) second clutch means connecting the servomotor to the free sprocket wheel of the second conveyor means; and



(f) adjusting means to disengage the first clutch means, engage the second clutch means and actuate the servomotor to move the second conveyor means relative to the first conveyor means thereby adjusting the distance between the stops on the first and second conveyor means;

(g) said adjusting means including: photo-couplers adapted to deliver one pulse with every half-revolution of the free sprockets of the first and second conveyor means; and, a rotary encoder for detecting the amount of rotation of the free sprockets which measures the distance between the front and rear engaging stops in accordance with the output of the rotary encoder during the time interval between the deliveries of the outputs of the photo-couplers.

4,641,743

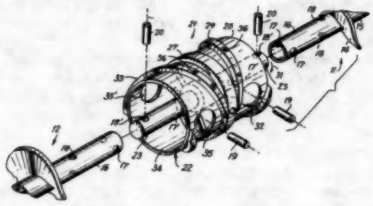
JUNCTION DEVICE FOR AUGER CONVEYORS

Dennis E. Kemp, Jr., P.O. Box 167, South Orange, N.J. 07079

Filed Jan. 21, 1986, Ser. No. 820,108

Int. Cl.[4] B65G *33/32*

U.S. Cl. 198—666 **13 Claims**



1. A hangerless anti-wear junction member for connecting adjacent auger conveyor sections within a trough, comprising a cylinder, shaft means mounted coaxially within said cylinder and extending in opposite directions for connecting the respective adjacent ends of said conveyor sections, internal auger segments interposed between the inner surface of said cylinder and said shaft means, said auger segments being oriented to advance material in said trough in a first direction responsive to rotation of said cylinder in a first sense, an external helix portion of wear resistant material formed on the periphery of said cylinder oriented to shift material in a direction opposite said first direction responsive to rotation of said cylinder in said first sense, and at least one radial flow passage formed through said cylinder in registry with said helix portion.

4,641,744

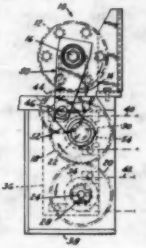
CONVEYOR CHAIN ADJUSTMENT MEANS

Anthony F. Spisak, Redford, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Aug. 12, 1985, Ser. No. 746,683

Int. Cl.[4] B65G *23/44*

U.S. Cl. 198—813 **2 Claims**



1. A chain adjustment arrangement comprising a fixed drive shaft, an adjustable mounting bracket, a pair of shafts rotatably mounted on said bracket, a drive gear mounted on said fixed drive shaft, a pair of meshing chain drive gears mounted on said respective shafts, a chain drive sprocket mounted on each of said pair of shafts, a conveyor chain mounted around each of said drive sprockets, a toothed member mounted on one of said pair of shafts, an idler shaft, an idler gear mounted on said idler shaft and in engagement with said drive gear and toothed member, a first link connected at its opposite ends to said drive shaft and said idler shaft, and a second link connected at its opposite ends to said idler shaft and said one of said pair of shafts, said links retaining said idler gear in engagement between said drive gear and toothed member upon movement of said mounting bracket to take up stretch in said conveyor chains.

4,641,745

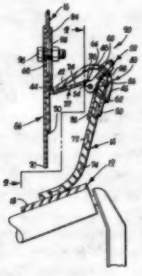
ADJUSTABLE SKIRT HOLDER FOR CONVEYOR

Raymond E. Skates, Mission Hills, Kans., assignor to Kansas City Rubber and Belting Company, Kansas City, Mo.

Filed Jun. 24, 1985, Ser. No. 748,038

Int. Cl.[4] B65G *21/20*

U.S. Cl. 198—836 **12 Claims**



1. A holder adapted for suspension from a support for maintaining an elongated, flexible skirt in sealing engagement with

a conveyor belt, said holder comprising, in combination with said skirt:

an elongated plate;

releasable means for mounting the plate on said support;

a lower, transversely, U-shaped hump coextensive in length with the plate, having an upper arm integral with the plate and extending outwardly therefrom, a downturned arm spaced outwardly of said plate and an intermediate, transversely arcuate, upper bend integrally joining the arms;

a series of upper, transversely U-shaped jaws looped over and spaced along said hump,

each jaw having an upper leg engaging the top of the upper arm, a downturned leg spaced outwardly of the downturned arm and an intermediate, transversely, arcuate, upper bight integrally joining the legs and spaced upwardly of the bend;

an elongated bar coextensive in length with the hump, interconnecting the downturned legs and spaced outwardly of the downturned arm; and

a releasable fastener having a portion thereof common to the jaws and connecting the latter with the hump at the bend and at the bights for clamping the upper marginal edges of the skirt between the bar and the downturned arm with the skirt depending from said bar and downturned arm.

4,641,746

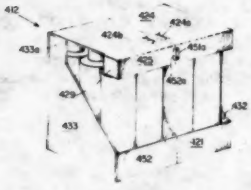
TRAY-TYPE SHIPPING AND DISPLAY CONTAINER

Arthur H. Dornbusch, and Roger E. Schanzle, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 630,312, Jul. 12, 1984, abandoned. This application Jun. 14, 1985, Ser. No. 745,541

Int. Cl.[4] B65D *5/26, 5/48, 5/54*

U.S. Cl. 206—44 R **29 Claims**



1. A combination shipping and display container for packaged products, said container comprising a substantially open tray having a high back panel, a low front panel providing a substantially open front wall, substantially open side panels connecting said low front panel and said high back panel, a pair of integral divider flaps extending between said back panel and said front panel and having a height substantially equal to that of said back panel, and a top panel extending forwardly from the upper edge of said back panel to the front of said container, said top panel having a top panel extension which folds downwardly to form an upper front flap portion which does not substantially close said substantially open front wall of said container and which includes means for establishing locking engagement with said divider flaps adjacent the upper front portion of such divider flaps.

4,641,747

LATCHING STORAGE CASE FOR A HOLDER CONTAINING AN INFORMATION CARRIER

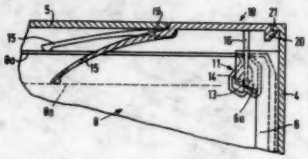
Gilbert E. Mestdagh, and Ghislanus M. A. M. Aldenhoven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

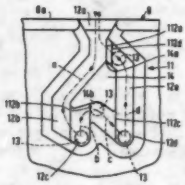
Filed May 3, 1985, Ser. No. 730,223

Claims priority, application Netherlands, May 14, 1984, 8401546

Int. Cl.[4] A47B *88/04;* **B65D** *85/672*

U.S. Cl. 206—309 **8 Claims**





1. A storage case and holder combination, said holder containing at least one information carrier,

said case comprising a housing forming at least one receptacle into which said holder can be inserted in an insertion direction from the front of the case,

spring means for urging a partly inserted holder in an ejection direction opposite said insertion direction, and

latching means for retaining a fully inserted holder in a latched position; and for unlatching the holder reponsive to pushing said holder inward a given distance from said latched position, so that the holder is ejected in the ejection direction by said spring means; said latching means comprising a latching arm element and a latching groove element, a first of said elements being connected to and forming part of said case, and a second of said elements being connected to and forming part of said holder; said latching arm element having a groove-engaging member which engages said groove upon insertion of the holder to said latched position; and at least one of said elements being resiliently deflectable with respect to said housing, from an initial relative position, in a direction perpendicular to said insertion direction, said elements being resiliently deflectable relative to each other in first and second orthogonal directions perpendicular to each other and perpendicular to said insertion direction,

characterized in that said groove element comprises an inlet-outlet portion, an insertion guiding portion, a latching transition portion, a latched position portion, an unlatching transition portion, and an ejection guiding portion; and said elements are arranged relative to each other and the housing and insertion direction such that during insertion of a holder to said latched position

(a) initially each element is in a respective initial position in which said groove-engaging member and inlet-outlet portion are aligned with each other in the direction of insertion,

(b) next said groove-engaging member and said inlet-outlet portion engage and undergo relative movement until said member engages the first insertion guiding portion,

(c) next said member engages said insertion guiding portion and said elements undergo relative movement, one of said elements being resiliently deflected in said first orthogonal direction,

(d) next said member engages said latching transition portion and said elements undergo further relative movement with further inward movement of the holder in said insertion direction until said member engages said latched position portion, during this relative movement said one of said elements resiliently moving in a direction opposite said first orthogonal direction to a relative position in which said one element is unstressed in said first orthogonal direction; during the engagement of the member with at least one of the insertion guiding and latching transition portions, one of said elements being resiliently deflected in said second orthogonal direction such that, when said holder is in the latched position, the member engages the latched position portion under resilient stress in said second orthogonal direction, and the engagement between the member and groove prevents movement of the holder in the ejection direction;

and upon movement of the holder, from said latched position, further in said insertion direction and then release of said holder:

(e) said member engages said unlatching transition portion, said elements undergoing further relative movement in said direction opposite said first orthogonal direction and in a direction opposite said second orthogonal direction,

(f) said member then engages said ejection guiding portion, and said spring means then urges said holder in the ejection direction so that the holder moves partly out of said case, and

(g) said member engages said ejection guiding portion, and said elements undergo further relative movement in the ejection direction free from further restraint by the latching means.

7. A storage case and holder combination, said holder containing at least one information carrier,

said case comprising a housing forming at least one receptacle into which said holder can be inserted in an insertion direction from the front of the case,

spring means for urging a partly inserted holder in an ejection direction opposite said insertion direction, and

latching means for retaining a fully inserted holder in a latched position; and for unlatching the holder responsive to pushing said holder inward a given distance from said latched position, so that the holder is ejected in the ejection direction by said spring means; said latching means comprising a resilient latching arm element connected to and forming part of said case, and a latching groove element connected to and forming part of said holder, at least a portion of said groove having a groove bottom surface; said latching arm element having a groove-engaging member which engages said groove upon insertion of the holder into the case, said groove having a latched position portion which said member engages when the holder is in said latched position, said member and groove being arranged such that the member prevents movement of the holder in the ejection direction from the latched position; said arm being resiliently deflectable relative to said case in first and second orthogonal directions perpendicular to each other and perpendicular to said insertion direction,

characterized in that said elements are arranged relative to each other and the housing and insertion direction such that, said holder being in said latched position, said member is in a latching position engaging said groove bottom surface, engagement with said surface preventing movement of the member in a direction opposite said second orthogonal direction;

upon movement of the holder, from said latched position, further in said insertion direction and then release of said holder, said member is moved from the latching position in a direction opposite said first orthogonal direction and then in a direction opposite said second orthogonal direction, and

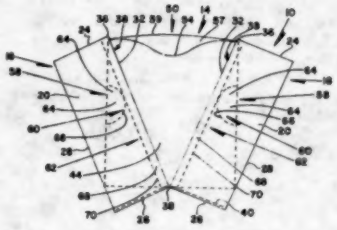
said case comprises a stop portion arranged to abut said member while the member is in the latching position, to prevent movement of said member in the first orthogonal direction.

4,641,748

PACKAGE FOR CIGARETTES AND THE LIKE

Robert T. Lewis, and Thomas T. Tudor, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Oct. 21, 1985, Ser. No. 789,527
Int. Cl.[4] B65D *5/32, 85/10*
U.S. Cl. 206—263 **11 Claims**



1. A package for articles such as cigarettes comprising:

an article container box having two spaced apart, parallel end walls, a front wall, a rear wall spaced apart from and parallel to the front wall, a floor, and an open top defined by the top edges of the end walls, front wall and rear wall;

a first side box having a front wall, a rear wall spaced apart from and parallel to the front wall, a top wall, a floor, a side wall and an open side opposite the side wall defined by the side edges of the front wall, rear wall, top wall and floor;

a second side box having a front wall, a rear wall spaced apart from and parallel to the front wall, a top wall, a floor, a side wall and an open side opposite the side wall defined by the side edges of the front wall, rear wall, top wall and floor;

the container box being symmetrically received within the first and second side boxes with one container box end wall being received through the open side of the first side box and the other container end wall being received through the open side of the second side box;

a strip of flexible, nonresilient material fastened to the floor of each of the side boxes functioning as a hinge about which the side boxes can be freely pivoted selectively either simultaneously or individually in an arcuate path between a closed position cooperating to completely enclose the container box whereat the first and second side boxes are located in side-by-side disposition with the open sides in registered facing relationship with the side edges of the front wall, rear wall, top wall and floor of the first box in aligned abutment with the side edges of the front wall, rear wall, top wall and floor of the second side box, respectively, and the side box top walls symmetrically cooperate to cover the open top of the container box, and an open position whereat the open sides of the first and second side boxes are spaced apart from each other, and the top walls of the first and second side boxes are spaced apart from each other to uncover at least a portion of the open top of the container box;

the container box and side boxes being positioned relative to each other such that either the rear wall of the container box is in constant contact with the rear walls of the side boxes, or the front wall of the container box is in constant

contact with the front walls of the side boxes, or both, such as to create a friction force sufficient to hold the side boxes on any position between full open and closed absent the application of a manual force to the side boxes sufficient to overcome the frictional forces;

first stop means associated with the container box and with the first side box to prevent movement of the first side box beyond the full open position; and,

second stop means associated with the container box and with the second side box to prevent movement of the second side box beyond the full open position.

4,641,749

HOLDING STAND FOR SURGICAL INSTRUMENTS

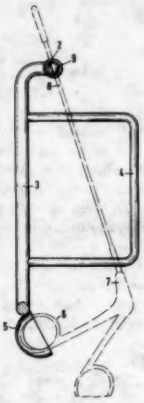
Helmut D. Link, Hamburg, and Arnold Keller, Kayhude, both of Fed. Rep. of Germany, assignors to Waldemar Link GmbH & Co., Fed. Rep. of Germany

Filed Jan. 6, 1986, Ser. No. 816,588

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1985, 3501837

Int. Cl.[4] B65D *85/24*

U.S. Cl. 206—370 **11 Claims**



1. A medical instrument holder comprising:

a base having first and second ends;

a first end bar, mounted at the first end of the base, including a plurality of instrument handle receptacles;

a second end bar, mounted at the second end of the base, comprising a notched comb bar and a locking bar, the comb and locking bars mounted to one another for relative movement between locking and open positions, the comb bar having first notches sized to receive the shafts of the medical instruments, the locking bar having second notches, the first and second notches having respective first and second open ends aligned when the locking and comb bars are in the open position, the first and second open ends being offset when the locking and comb bars are in the locking position to retain the shafts in the first notches; and

a handle, including a gripping surface, attached to the base, the gripping surface spaced apart from the base at a chosen position so the gripping surface may be easily grasped without contacting a medical instrument supported by one of the instrument handle receptacles and the second end bar.

4,641,750

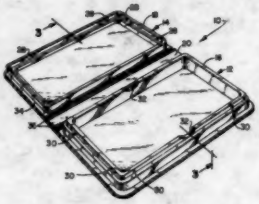
TWO-PLY CASSETTE ALBUM AND METHOD OF MAKING SAME

Breck J. Johnson, Prior Lake, and George D. Canfield, Chaska, both of Minn., assignors to Blackbourn, Inc., Eden Prairie, Minn.

Filed Oct. 15, 1985, Ser. No. 787,527

Int. Cl.[4] B65D *85/672*; B31B *1/64*; B32B *31/20*

U.S. Cl. 206—387 **12 Claims**



1. A two-ply, book-style album for holding video cassettes and the like, comprising:

a one-piece, integral inside sheet of semi-rigid thermoplastic having front and back sides, said inside sheet defining a pair of raised integral interfitting tray portions and an integral spine portion connecting the tray portions;

a one-piece, integral outside sheet of semi-rigid thermoplastic having front and back sides, said outside sheet defining a pair of integral cover portions and an integral spine portion connecting the cover portions; a peripheral seal securing said inside and outside sheets together; and

a pair of laterally spaced-apart, longitudinal seals securing adjacent spine portions of said inside and outside sheets, each longitudinal seal including a groove formed by contact with a thermally-heated rule to a substantial depth into the front side of the spine portion of the inside sheet so as to define living hinges in the inside sheet and a smooth surface on the backside of the outside sheet to facilitate opening and closing the album.

4,641,751

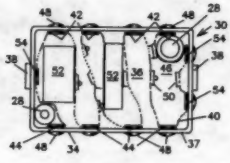
COSMETIC CARRIER WITH REMOVABLE RESILIENT RETAINING MEANS

Mildred W. Walker, 2188 Johnson Dr., Ventura, Calif. 93003

Continuation-in-part of Ser. No. 707,752, Mar. 4, 1985, abandoned. This application Jan. 2, 1986, Ser. No. 815,721

Int. Cl.[4] A45D *34/00*; B65D *81/08*

U.S. Cl. 206—478 **8 Claims**



1. A cosmetic carrier adapted for use alone or for placement in the bottom of a larger container to contain a plurality of cosmetic containers from bumping and tipping in transit comprising:

(a) an open topped resiliently rigid container having sidewalls and a bottom;

(b) a vertically disposed ribbon of elastic material horizontally crisscrossing said container between a plurality of first points on one area of said sidewalls and a plurality of second points disposed between said first points on a

second area of said sidewalls opposite said first area to create a plurality of generally triangular areas within said container, each of said areas being bounded on two sides by said elastic material and on a third side by a portion of said sidewalls;

(c) a plurality of first fastening means for fastening said elastic material to said sidewalls at said first and second points; and,

(d) a plurality of releasable second fastening means attached to said elastic material at a plurality of opposed points along said material between said first and second points whereby said triangular areas can be releasably subdivided to contain smaller articles by fastening opposed ones of said fastening means.

4,641,752

HOLDER FOR HAMBURGERS AND THE LIKE

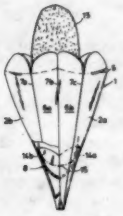
Janos Palffy, Asköviksvägen 4, 725 92 Västerås, Sweden

Filed May 24, 1985, Ser. No. 737,471

Claims priority, application Sweden, May 25, 1984, 8402838

Int. Cl.[4] B65D *81/02*; A21D *10/02*

U.S. Cl. 206—583 **10 Claims**



1. A holder for a food article and the like, comprising:

opposing front and rear walls, each of said front and rear walls having two side edges, a top edge and a bottom edge, said front and rear walls joined along said bottom edges and diverging upwardly therefrom;

first and second opposing side walls, each of said first and second side walls individually extending between said side edges on said front wall and said side edges on said rear wall, said side walls being folded into a bellows shape to enable said front and rear walls to diverge upward from said joined bottom edges, said side walls and said front and rear walls made from an elastically deformable sheet material and forming a container having an open end partially described by the top edges of said front and rear walls; and

support means slidably positioned within said container for supporting the food article and for moving slidably upward within said container in response to inward pressure along said front and rear walls, said support means being concave in the direction of said open end and having two upwardly diverging resilient flanges connected along the base of support means, each of said flanges being bent outward, so that said support means is expandable when moving upward along said diverging front and rear walls toward said open end.

4,641,753

MAIL SORTING APPARATUS

Masuo Tamada, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1984, Ser. No. 686,402

Claims priority, application Japan, Dec. 26, 1983, 58-244084

Int. Cl.[4] B07C *1/00, 3/20*

U.S. Cl. 209—546 **3 Claims**

1. An apparatus for sorting mail, comprising:

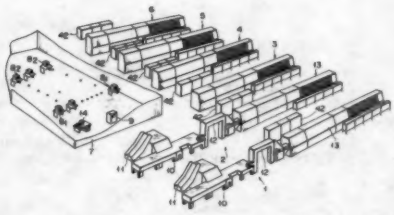
readout means for reading out destination data on mail;

discriminating means for discriminating the destination data based on the result of the readout operation of the readout means such that an upper order address data and a lower order address data contained in the destination data are discriminated separately;

first control means receiving the output signals of the discriminating means and the readout means so as to generate a first sorting data corresponding to the destination data when both upper and lower order address data have been discriminated and to produce the upper order address data and the readout result when the upper order address data only has been discriminated;

a plurality of video coding desks each including display means and a keyboard, and assigned to predetermined regions or cities;

distributing means for distributing the destination data from the readout means to the corresponding video coding desk



according to the discriminated upper order address data so as to display the destination data on the display means of the video coding desk and to enable the keyboard of the video coding desk to input correct lower order address data based on the display;

second control means for generating a second sorting data corresponding to the upper order address data distributed to the corresponding video coding desk, and the lower order address data inputted from the keyboard of said video coding desk;

sorting data assigning means for assigning to the mail the first or second sorting data generated from the first or second control means; and

sorting/collecting means for sorting and collecting said mail into predetermined sorting sections according to the sorting data applied by said sorting data assigning means.

4,641,754

QUICK CONNECT FRAME

Gregory F. Hebel, Chicago, and Gregg A. Temkin, Evanston, both of Ill., assignors to Homaco, Inc., Chicago, Ill.

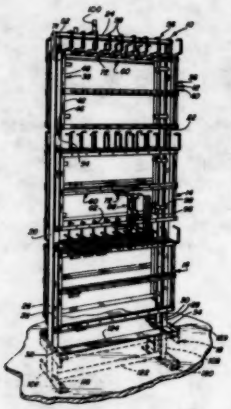
Filed Jan. 16, 1986, Ser. No. 819,422

Int. Cl.[4] A47F *7/00*

U.S. Cl. 211—26 **15 Claims**

1. In a quick connect frame for use in interconnecting a plurality of wires which wires are part of a communication system, said frame having a pair of uprights, means connecting the uprights, a foot connected to the bottom of each upright to hold each upright in a vertical attitude, a mounting bracket secured to the uprights to support a block module, the improvement comprising; a mounting strip connected to the mounting bracket, a plurality of spacers secured to the mounting strip, each of said spacers having an elongated base secured to the mounting strip, a post connected to each of a pair of opposite ends of the base, each post having one end connected to the base, a mounting bar connected to the other end of the posts interconnecting the posts, said mounting bar being

spaced away from the base by said posts, and a block bracket mounted on each of the spacers, each of said block brackets



being adapted to receive a quick connect block for receiving a second plurality of wires of the communication system.

4,641,755

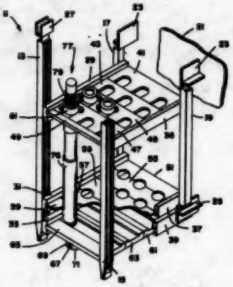
PROJECTILE STOWAGE RACK

Jim Oliver, Port Orchard, and Pat Watson, Bremerton, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 10, 1985, Ser. No. 743,227

Int. Cl.[4] A47F *7/00*

U.S. Cl. 211—60.1 **3 Claims**



1. A stowage rack comprising:

(a) two pairs of vertical support members;

(b) a plurality of side channels connected to respective pairs of said vertical support members, said plurality of side channels including a pair of upper side channels, a pair of middle side channels, and a pair of lower side channels;

(c) a plurality of upper clamps and lower clamps engaging said side channels, said upper clamps and said lower clamps including openings for receiving vertically extending objects such as projectiles;

(d) a plurality of base plates engaging said side channels, said base plates supporting the lower end of said vertically extending objects and including slots for receiving the lower end of said vertically extending objects;

(f) each of said pairs of side channels having a slot for receiving the ends of said upper clamps, said lower clamps and said base plates; and

(g) an adjustable collar engaging the upper end of each vertically extending object and said upper clamps to retain said vertically extending object in fixed position, said adjustable collar including a bottom collar and a top collar wherein said bottom collar engages said upper clamp and said top collar engages said object.

4,641,756

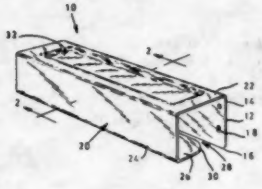
UNITARY PANTS HOLDER

Robert L. Brown, 322 Davis Dr., Kingston, Tenn. 37763

Filed Jul. 26, 1985, Ser. No. 759,648

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—89 **12 Claims**



1. A unitary holder for pants and like garments, such holder adapted for mounting upon a substantially vertical surface, which comprises:

a substantially rectangular back panel having a top edge and a bottom edge, said back panel being provided with apertures therethrough for passage of fastening means for mounting such holder upon such surface; and

a hollow body member having open ends, said body member being substantially co-extensive with said back panel and substantially C-shaped in cross-section having a top edge and a bottom lip, said top edge of said body member joined to said back panel, said bottom lip of said body member terminating in an edge at a selected distance from said back panel to define a continuous slot between said edge of said lip and said back panel to slidably accept such garments from either end of said body, said body member having sufficient flexibility whereby said slot will accept garments of different thicknesses, and said lip will frictionally hold such garments against said back panel.

4,641,757

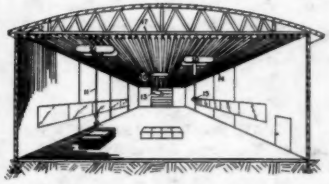
CIRCULATING LATCH TRANSPORT MECHANISM FOR OVERHEAD CRANES

John V. Rosendale, Hampton, Va., assignor to Robotic Systems, Inc., Hampton, Va.

Filed May 6, 1983, Ser. No. 492,268

Int. Cl.[4] B66C *19/00*

U.S. Cl. 212—205 **24 Claims**



1. A circulating latch transport system comprising at least one circulating latch transport mechanism for supporting apparata from a plurality of parallel beams, said system comprising means capable of moving said mechanism in a longitudinal direction, in a transverse direction and in a combination of both

of said directions about said parallel beams, said transport mechanism including a plurality of trucks for moving said mechanism along said beams, said trucks being rotatable about the perimeter of each said circulating latch transport mechanism, said trucks together forming an endless, substantially flexible track system, said transport mechanism further comprising at least one drive motor, each of said trucks comrpising one pair of opposed jaws attached to said truck and means for selectively moving said jaws towards and away from each other as said trucks move transversely across said beams in order to thereby selectively engage and disengage said parallel beams.

4,641,758

BLOW-MOLDED BOTTLE-SHAPED CONTAINER OF BIAXIALLY ORIENTED THERMOPLASTIC SYNTHETIC RESIN WITH WIDE PORT AND METHOD OF MOLDING THE SAME

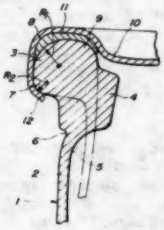
Hiroaki Sugiura, Tokyo, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1984, Ser. No. 672,670

Claims priority, application Japan, Nov. 22, 1983, 58-220241; Nov. 22, 1983, 58-180526[U]; Nov. 22, 1983, 58-180527[U]; Dec. 15, 1983, 58-236890; Dec. 15, 1983, 58-193131[U]; Dec. 28, 1983, 58-249915; Feb. 6, 1984, 59-19694

Int. Cl.⁴ B65D *23/00*

U.S. Cl. 215—1 C **2 Claims**



1. A blow-molded bottle-shaped container of biaxially oriented thermoplastic synthetic resin with a wide port comprising:

a neck edge portion defining the edge of said wide port, said neck edge portion including an upper curved surface having a radius of curvature, a lower outer peripheral curved surface having a radius of curvature which is less than said radius of curvature of said upper curved surface, and an inner peripheral surface, wherein the centers of curvature of said upper curved surface and said lower outer peripheral curved surface lie within said neck edge portion;

a thin, bottomed cylindrical body formed by biaxial orientation blow molding;

a short thick cylindrical neck portion formed between said neck edge portion and said thin, bottomed cylindrical body, said short thick cylindrical neck portion having a radial thickness which is greater than the radial thickness of said thin bottomed cylindrical portion; said short thick cylindrical neck portion extending obliquely and radially inwardly from said inner peripheral surface of said cylindrical neck edge portion to define a cylindrical neck edge portion inner peripheral surface having a radius which is smaller than the radius of said inner peripheral surface of said neck edge portion, and said short thick cylindrical neck portion extending obliquely downwardly from said lower outer peripheral curved surface of said neck edge portion to define a cylindrical neck portion outer peripheral surface located radially inward of said lower outer peripheral surface of said neck edge portion;

wherein said cylindrical body is formed integrally with said short thick cylindrical neck portion and said cylindrical body abruptly bends and swells outwardly from a lower central portion of said short thick cylindrical neck portion;

wherein said upper curved surface of said neck edge portion is dimensioned so as to obtain strong sealing between a cap and the bottle, and said lower outer peripheral curved surface is dimensioned so as to enhance openability of the cap; and

wherein said cylindrical neck portion prevents the transmission of stresses from the thin, bottomed cylindrical body to the neck edge portion, thereby preventing deformation of the neck edge portion during blow molding of the thin, bottomed cylindrical body.

4,641,759

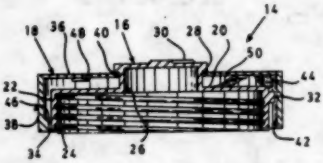
SAFETY BOTTLE CLOSURE HAVING A TIME INDICATOR

John Kelley, Rte. 4, Box 146-B, Lexington, Tenn. 38351

Continuation-in-part of Ser. No. 784,542, Oct. 4, 1985. This application Mar. 21, 1986, Ser. No. 845,951

Int. Cl.⁴ B65D *55/02*

U.S. Cl. 215—220 **20 Claims**



1. A closure for bottles of the type having twist-type closure provision, such closure having child-proof opening characteristics, which comprises:

an inner member for sealing such bottle, said inner member having

a. a disk portion,

b. a peripheral lip extending at substantially right angles from said disk portion, said lip being provided on the interior thereof with a surface to cooperate with such closure provision of such bottle, and

c. a central neck portion extending from said disk portion in a direction opposite said lip, said neck portion terminating in a closed flange substantially parallel to said disk portion,

an outer member for effecting rotation of said inner member having

a. a disk portion substantially parallel with said disk portion of said inner member, said disk portion of said outer member being provided with a central opening having a diameter sufficient to closely receive said neck portion and said flange whereby said flange can be passed through said opening to assemble such closure,

b. a peripheral lip extending at substantially right angles from said disk portion and substantially equally spaced from said lip of said inner member, and

c. means cooperating between said inner member and said outer member to lock together said members yet permitting relastive rotation thereof,

biasing means interposed between said disk portions of said outer member and said inner member for normally maintaining said disk portions separated a selected distance but permitting said disk portions to be moved toward each other upon application of pressure to said disk portion of said outer member in a direction toward said inner member disk portion;

cooperating opening tab means each carried by said inner member and said outer member whereby said opening tab means are engaged when said outer member and said inner member are properly rotationally oriented and said pres-

sure is applied to said outer member thereby effecting counter-clockwise rotation of said inner member when said outer member is rotated in a counter-clockwise direction to effect removal of such closure from such bottle;

cooperating closing tab means each carried by said inner member and said outer member whereby said inner member is rotated in a clockwise direction when said outer member is rotated in a clockwise direction to effect tightening of such closure upon such bottle; and

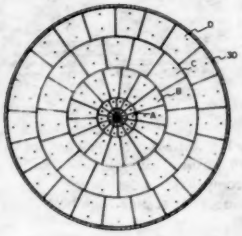
visable alignment indicia carried by said disk portion of said outer member, adjacent said opening, and by said flange of said inner member whereby when said indicia are aligned, said opening tab means are aligned for said engagement upon application of said pressure to said outer member.

4,641,760

INFLATABLE BAGS

Seiji Takeuchi, Burlington, and Byron H. Anger, Hamilton, both of Canada, assignors to Don Fell Limited and Donfab Investments, Inc., both of Hamilton, Canada

Filed Nov. 18, 1985, Ser. No. 799,324
Claims priority, application Canada, Oct. 8, 1985, 492494
Int. Cl.[4] B65D *30/28*
U.S. Cl. 220—1 B **6 Claims**



1. In combination with a storage tank having a vertically extending cylindrical wall defining a central vertical axis, an array of inflated bags of tough, flexible, liquid tight material arranged to form a false bottom in such tank;

(a) said array comprising an inner series of said bags surrounded by at least one annular series of said bags;

(b) each bag of the inner series having a shape defined by

(i) a pair of similar top and bottom panels each having the shape of an isosceles triangle with tapering side edges, an end edge and a pointed tip,

(ii) a pair of rectangular side panels similar to each other interconnecting respective ones of said side edges,

(iii) a rectangular outer panel interconnecting respective ones of said end edges with each other and with outer end edges of the side panels, and

(iv) means interconnecting inner end edges of the side panels with each other and with the tips of the top and bottom panels;

(c) said bags of the inner series being arranged with their tips at the central vertical axis of the tank in a closed circular arrangement;

(d) each bag of each annular series having a shape defined by

(i) a pair of similar top and bottom panels each having the shape of a truncated isosceles triangle with tapering side edges and longer and shorter end edges,

(ii) a pair of rectangular side panels similar to each other interconnecting respective ones of said side edges,

(iii) a rectangular outer panel interconnecting respective ones of said longer end edges of the top and bottom panels with each other and with outer end edges of the side panels, and

(iv) a rectangular inner panel interconnecting respective ones of said shorter end edges of the top and bottom panels with each other and with inner end edges of the side panels,

(e) said bags of each annular series being arranged with their inner panels adjacent the outer panels of the bags of the inner series or of an inner one of said annular series in a closed annular arrangement coaxial with the inner series; and

(f) the outer panels of the bags of the outermost annular series being adjacent said cylindrical tank wall.

3. A kit of inflatable bags of tough, flexible, liquid tight material for placing in a storage tank having a vertically extending cylindrical wall, to form a false bottom in such tank; said kit comprising

(a) a number of said bags of a first shape each of which has

(i) a pair of similar top and bottom panels each having the shape of an isosceles triangle with tapering side edges, an end edge and a pointed tip,

(ii) a pair of rectangular side panels similar to each other interconnecting respective ones of said side edges,

(iii) a rectangular outer panel interconnecting respective ones of said end edges with each other and with outer end edges of the side panels, and

(iv) means interconnecting inner end edges of the side panels with each other and with the tips of the top and bottom panels; and

(b) a number of said bags of a second shape each of which has

(i) a pair of similar top and bottom panels each having the shape of a truncated isosceles triangle with tapering side edges and longer and shorter end edges,

(ii) a pair of rectangular side panels similar to each other interconnecting respective ones of said side edges,

(iii) a rectangular outer panel interconnecting respective ones of said longer end edges of the top and bottom panels with each other and with outer end edges of the side panels, and

(iv) a rectangular inner panel interconnecting respective ones of said shorter end edges of the top and bottom panels with each other and with inner end edges of the side panels,

(c) the number of bags of the first shape being sufficient to form a closed circular series of bags when inflated, and

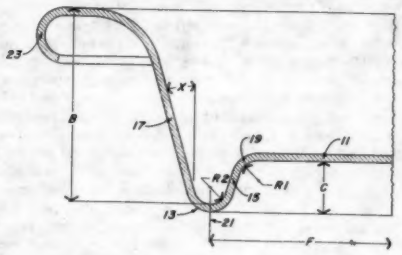
(d) the number of bags of the second shape being sufficient to form a closed annular series of bags when inflated closely surrounding the circular series of bags of the first shape.

4,641,761

INCREASED STRENGTH FOR METAL BEVERAGE CLOSURE THROUGH REFORMING

Eugene F. Smith, Morrison, and Tuan A. Nguyen, Northglenn, both of Colo., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 545,556, Oct. 26, 1983, Pat. No. 4,559,801. This application Sep. 5, 1985, Ser. No. 772,837
Int. Cl.[4] B65D *8/08*
U.S. Cl. 220—66 **8 Claims**



1. A sheet metal closure of increased strength, comprising a substantially planar center panel, a countersink portion around

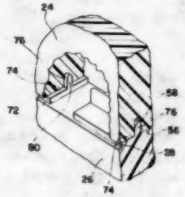
said center panel bounded on the inside by an integral inner panel wall and on the outside by an integral chuckwall, said inner panel wall being straight and having a substantially perpendicular orientation relative to the center panel, a first curved portion having a first radius integrally joining said inner panel wall to said center panel, a second curved portion having a second radius at the bottom of said countersink portion to define a countersink radius, and a peripheral flange extending radially outward from said chuckwall, the distance from the upper surface of said flange to the bottom of said countersink radius defining a countersink depth, the distance from the lower surface of said central panel to the bottom surface of said second curved portion defining a panel height, said closure being formed from a shell by the process of initially forming said shell with an increased countersink depth relative to a final, predetermined countersink depth, a reduced panel height relative to the final, predetermined panel height, and a countersink radius of about 0.02 inches and, thereafter, reforming said shell to decrease said countersink depth to said predetermined countersink depth and increase said panel height to said predetermined panel height while maintaining said countersink radius of about 0.02 inches.

4,641,762

POWER DEVICE HOUSING WITH LUBRICANT ANTI-WICKING FACILITY

Colin Overy, Brockville, Canada, assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 25, 1985, Ser. No. 705,326
Int. Cl.[4] B65D *25/54*
U.S. Cl. 220—81 R **4 Claims**



1. A housing of a power tool, which comprises:

a first housing section formed with an opening to one side thereof and with walls internally thereof to form at least two compartments opening to one side thereof;

the first housing section formed with a peripheral edge about the opening thereof and a groove formed at least in the portions of the edge which extend between the two compartments;

a second housing section formed with an opening to one side thereof and with walls internally thereof to form at least two compartments opening to the one side thereof;

the second housing section formed with a peripheral edge about the opening thereof and a rib formed at least in the portions of the edge of the second housing section which extend between the two compartments thereof;

the peripheral edges of the first and second housing sections being in interfacing engagement with the rib nested in the groove to form an interlock for interlocking the first and second housing sections in an assembled relationship to form the housing;

the two compartments of the first housing section mating with the two compartments of the second housing section when the peripheral edges are in interfacing engagement to form two cases of the housing; and

means formed in the rib for precluding the movement of a flowable substance from one of the two cases, through the interlock to the area of the other of the two cases,

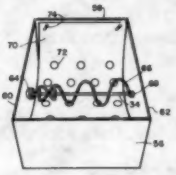
wherein the precluding means includes at least one gap formed transversely in a portion of the rib between the two cases to interrupt the continuity of the interlock and thereby preclude movement of the flowable substance from one of the two cases to the other.

4,641,763

ICE AND BEVERAGE DISPENSING APPARATUS AND METHOD WITH DUAL PURPOSE LINER

Jerry L. Landers, and Gregory E. Fischer, both of Sellersburg, Ind., assignors to Servend International, Jeffersonville, Ind.

Filed May 18, 1984, Ser. No. 611,879
Int. Cl.[4] B67D *5/56*
U.S. Cl. 222—129.1 **30 Claims**



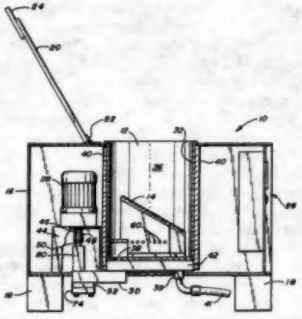
26. Ice storing and dispensing apparatus comprising a bin for storing ice, a cold plate at a bottom of the bin, passages in the cold plate for flowing beverages through the cold plate, a liner within the bin spaced above the bottom for supporting a portion of the stored ice above the liner spaced from the bottom of the bin, openings in the liner for permitting a portion of the stored ice to move through the openings and to fall to the bottom of the bin for contacting the ice with the cold plate at the bottom of the bin, an auger being centered above the cold plate between side edges thereof and the auger cooperating with openings in the liner means to distribute ice generally over an entire upper surface of the cold plate, a dispenser connected to the bin above the liner for dispensing ice stored from above the liner.

4,641,764

VISCOUS THERMOPLASTIC MELTING AND DISPENSING UNIT

W. Harrison Faulkner, III, Pacific Grove, Calif., assignor to Slautterback Corporation, Monterey, Calif.

Filed May 9, 1985, Ser. No. 732,425
Int. Cl.[4] E67D *5/62*
U.S. Cl. 222—146.2 **12 Claims**



1. A hot-melt supply unit comprising,

a heated tank means for melting solid hot melt, the tank having a lower region holding fluid melt with a material outflow port and an upper region with a solid material intake port, the tank having an upright sidewall and a bottom wall which is imperforate except for the outflow

port which extends through the bottom wall at a location near the sidewall, and

a melt grid means disposed in said tank for providing material flow equalization to said outflow port, the grid means having a plurality of structures providing impedance to the flow of hot melt material over short paths to the material outflow port, said structures including a plurality of upright, parallel fins, said fins having top edges which slope downwardly from a higher end to a lower end, said higher end being located adjacent to said material outflow port, said lower end being located above the imperforate portion of the bottom wall and distal to said material outflow port.

4,641,765

EXPANDABLE PRESSURIZED BARRIER CONTAINER

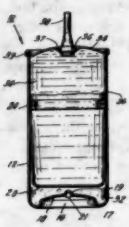
George B. Diamond, Anthony & Woodglen Rds., Glen Gardner, N.J. 08826

Continuation-in-part of Ser. No. 658,274, Oct. 5, 1985, Pat. No. 4,562,942, which is a continuation-in-part of Ser. No. 627,431, Jul. 3, 1984, abandoned. This application Sep. 5, 1985, Ser. No. 771,491

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.[4] B67D *1/04*

U.S. Cl. 222—386.5 **16 Claims**



1. A pressurizable container for containing a fluent product under pressure and for dispensing the product through a discharge opening, said container comprising:

a can wall surrounding and defining a can chamber and having an upper end with the discharge opening defined therein and an opposite lower end; the can wall being resilient and expanding slightly when the can chamber is pressurized and returning to an unexpanded condition as the pressure in the can chamber is reduced to zero; the can wall having a dimension across the can chamber which increases by at least approximately one one-thousandth (1/1000) of its value in the unexpanded condition as the pressure in the can chamber goes from the unexpanded condition to a pressure of 100 psi;

a flexible barrier having an edge mounted to the can wall in the can chamber, the barrier dividing the can chamber into a product chamber comprising a part of the can chamber between the barrier and the upper end of the can wall for containing a fluent product to be stored and dispensed and a propellant chamber comprising a part of the can chamber between the barrier and the upper end of the can wall for containing a propellant adapted to provide pressure upon the barrier to urge the barrier into the product chamber for expelling the product through the discharge opening; the barrier comprising material that is impervious both to the product and propellant; and

means for mounting the edge of the flexible barrier to the can wall in a manner that seals the barrier to the can wall for preventing the product and propellant from leaking past the edge of the barrier as the can wall expands and returns to the unexpanded condition;

the flexible barrier being extendible toward the lower end when the product chamber is initially filled with fluent product and being gradually extensible toward the upper end through pressure generated by propellant in the propellant chamber to expel the fluent product out of the can chamber through the discharge opening.

4,641,766

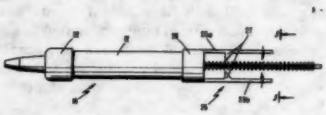
METERING DISPENSER FOR HIGH VISCOSITY COMPOSITIONS

Richard J. Vlasich, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 2, 1984, Ser. No. 667,624

Int. Cl.[4] B67D *5/42*

U.S. Cl. 222—391 **11 Claims**



1. A device for dispensing predetermined doses of high viscosity compositions, comprising:

(a) an elongate hollow body having a discharge opening at a front end thereof and an interior region for containing said composition;

(b) plunger means received within said hollow body through a rear end thereof for dispensing said composition through the front end in response to longitudinal advancement of said plunger means through the body; and

(c) actuating means fixed to said hollow body for engaging with and to longitudinally advance said plunger means a predetermined incremental distance within the body, causing a precisely metered amount of composition to be dispensed through the discharge opening, said actuating means including a pair of actuating arms each having one end secured to said hollow body and an opposite free end projecting rearwardly from said hollow body and the front end thereof, said arms including, intermediate said one ends and free ends thereof, means for engaging said plunger means to longitudinally advance same through the body upon depressing of said free ends together.

4,641,767

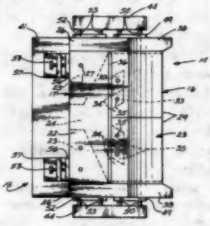
CASTING TIP ASSEMBLY WITH REPLACEABLE UPSTREAM AND DOWNSTREAM UNITS

Dennis M. Smith, Crestline, Calif., assignor to Hunter Engineering Co., Inc., Riverside, Calif.

Filed Jan. 28, 1985, Ser. No. 695,679

Int. Cl.[4] B22D *11/06*

U.S. Cl. 222—591 **4 Claims**



1. A molten metal feed tip assembly mountable in a tip holder of a continuous casting machine comprising:

an upstream unit comprising:

a pair of upstream plates;

at least one spacer between the upstream plates for spac-

ing the upstream plates apart and for forming at least one upstream channel between the upstream plates for the downstream flow of molten metal through the upstream unit; and

a pair of upstream end dams for enclosing the ends of the upstream plates;

a preassembled downstream unit mountable in leak-proof abutment with the upstream unit comprising:

a pair of downstream plates, each comprising two or more segments;

means for maintaining the segments of each downstream plate in edge-to-edge abutment;

at least one spacer between the downstream plates for spacing the downstream plates apart and for forming at least one downstream channel for the downstream flow of molten metal from the upstream unit through the downstream unit; and

a pair of downstream end dams for enclosing the ends of the downstream plates.

4,641,768

TEEMING APPARATUS AND METHOD

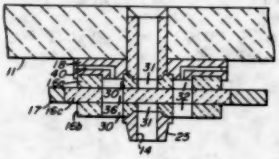
Paul L. Hill, Chesterfield, United Kingdom, assignor to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1985, Ser. No. 719,089

Claims priority, application United Kingdom, May 11, 1984, 8412101

Int. Cl.[4] B22D *41/08*

U.S. Cl. 222—590 **10 Claims**



1. A sliding gate valve for controlling the flow of molten metal from the pour opening of a teeming vessel comprising:

a mounting plate attached to said teeming vessel about the pour opening thereof;

a stationary plate secured to said mounting plate and having a teeming orifice in registry with said teeming vessel pour opening;

a second orifice in said stationary plate longitudinally spaced from the teeming orifice therein;

a movable gate having a teeming orifice in sliding contact with said stationary plate, said gate being selectively movable to place its teeming orifice into registry with either of the orifice in said stationary plate; and

gas feed means communicating with said stationary plate second orifice including means for directing gas fed to said second orifice away from said teeming vessel and through said gate orifice when it is placed in registry with said stationary plate second orifice.

10. A method of teeming molten metal from a vessel employing a teeming valve having a stationary plate containing a teeming orifice and a second orifice longitudinally spaced from the teeming orifice, a movable gate having a teeming orifice therein, and gas supply means communicating wih said stationary plate second orifice, said method comprising the steps of:

(a) placing said gate teeming orifice in registry with said stationary plate teeming orifice for the discharge of molten metal from said vessel;

(b) moving said gate teeming orifice from registry with said stationary plate teeming orifice into registry with said stationary plate second orifice; and

(c) supplying inert gas to said stationary plate second orifice when leaking of molten metal is detected through the interface between said stationary plate and said gate to freeze and thereby block the leakage.

4,641,769

FOLDING ROOF RACK FOR CARS

Salvador Ten Angel, Juan Bravo 16, 40001-Segovia, Spain

Continuation of Ser. No. 625,536, Jul. 19, 1984, abandoned. This application Apr. 1, 1986, Ser. No. 847,132

Claims priority, application Spain, Jul. 27, 1983, 273778

Int. Cl.[4] B60R *9/04*

U.S. Cl. 224—314 **5 Claims**

1. A folding car roof rack comprising:

(a) first and second rigid side members of channel shape, each having first and second ends;

(b) first and second rigid end members, each of which has at least one elongate flat surface and first and second ends;

(c) a first articulated joint connecting the first ends of said first side and first end members in such a way that first end member can swing by 270 degrees about said first end of said first side member from a first position in which said flat surface of said first end member is parallel and close to the outer bottom surface of said first channel shaped side member to a second position in which said first end member forms a right angle with said first side member;

(d) a second articulated joint connecting the first ends of said second side and second end members in such a way that said second end member can swing by 270 degrees about said first end of said second side member from a first position in which said flat surface of said second end member is parallel and close to the outer bottom surface of said second channel shaped side member to a second position in which said second end member forms a right angle with said second side member;

(e) first separable fastening means for securing the second ends of said first side and second end members together while said roof rack is in use and said second end member is in said first position thereof relative to said first side member;

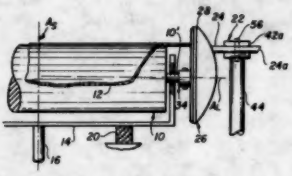
(f) second separable fastening means for securing the second ends of said second side and first end members together while said roof rack is in use and said first end member is in said second position thereof relative to said second side member; and

(g) a plurality of cargo support members, each cargo support member being articulated approximately midway between its ends and having ends which are respectively articulated to said first and second side members in such a manner that the open sides of said channel shaped side members face each other and each cargo support member can fold up, without interference with any other cargo support member, within a box-like split tube formed by said facing side members brought close to each other, when said separable fastening means are separated for placing said end members in their respective first positions.

4,641,770
ANGULARLY ADJUSTABLE WEB-SUPPORTING STEERING ROLLER

Edwin A. Hediger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1985, Ser. No. 727,942
Int. Cl.[4] B65H *23/02*
U.S. Cl. 226—23 **8 Claims**



1. In a tracking apparatus for a traveling web including a steering roller supporting such web, said steering roller being mounted for rotation about its longitudinal axis and angular adjustment about a steering axis perpendicular to such longitudinal axis mechanism for angularly adjusting said steering roller about said steering axis in response to lateral movement of the supported web relative to said steering roller to correct tracking of such web, said mechanism comprising:

means coupled to said steering roller for rotating said steering roller about said steering axis;

means for sensing lateral movement of a supported web relative to said steering roller, said sensing means including a disc having a flat facial surface engagable with said web and an opposed spherical facial surface, an arc of said spherical facial surface describing a line having all points equidistant from said steering axis; and

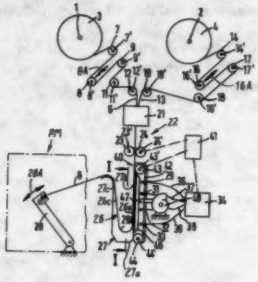
means, associated with said rotating means and responsive to said sensing means, for moving said rotating means to rotate said steering roller for angular adjustment about said steering axis an amount corresponding to sensed lateral movement of the web and thereby correct tracking of said web, said moving means including a follower member attached to said rotating means, said follower member engaging said spherical facial surface of said sensing means at said arc, whereby lateral movement of said web with said steering roller upon angular adjustment of said web with said steering roller upon angular adjustment of said roller is not imparted to said moving means.

4,641,771
METHOD AND APPARATUS FOR SUPPLYING WRAPPING MATERIAL TO CIGARETTE PACKING AND LIKE MACHINES

Gerhard Masuch, and Claus Riedel, both of Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Mar. 13, 1985, Ser. No. 711,446
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411610
Int. Cl.[4] B65B *11/32, 19/22, 41/12;* **B65H** *20/10*
U.S. Cl. 226—115 **18 Claims**

1. Apparatus for supplying strip-shaped wrapping material to a processing machine, particularly to a packing machine, comprising a source of wrapping material; a magazine; means for feeding wrapping material from said source into said magazine and for converting the wrapping material in the magazine into a loop; means for intermittently withdrawing wrapping material from said magazine with accompanying changes in the dimensions of the loop and an increasing tendency of the loop to become agitated in response to increasing frequency of intermittent withdrawal of wrapping material from the magazine, said magazine including a portion which is adjacent to a part of the loop therein; and means for opposing agitation of the loop, said opposing means being adjacent to said portion of the magazine and acting upon said part of the loop therein, said opposing means comprising an endless foraminous conveyor

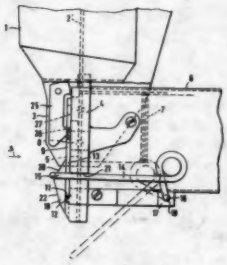


one side of which is adjacent said portion of the magazine and means for pneumatically urging said part of the loop in said magazine against said side of said conveyor.

4,641,772
ANTI-JAMMING NOSE PLATE FOR DRIVING APPARATUS FOR FASTENERS

Erich Skuthan, Holzmaden, Fed. Rep. of Germany, assignor to Karl M. Reich Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed Feb. 19, 1985, Ser. No. 703,222
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404755
Int. Cl.[4] B25C *1/00, 5/00;* **B25F** *5/00*
U.S. Cl. 227—123 **9 Claims**



1. An apparatus for driving fasteners, comprising housing means, a nose portion (4) with an ejection channel (5) for said fasteners attached to said housing means, a driving means slidably supported in said ejection channel, a magazine attached to said nose portion (4) for storing and supplying said fasteners into said ejection channel, a lateral access opening in said nose portion (4) for providing access substantially to the entire lower end of said ejection channel, a movable nose plate (9) for covering said lateral access opening of said ejection channel, spring means secured to said apparatus for biasing said nose plate into a window closing position, whereby said nose plate is pressed against said opening of said nose portion in an elastically yielding manner, said nose portion comprising stop shoulder means, said nose plate comprising a stop surface engaging said stop shoulder means in the window closing position of said nose plate, whereby a lengthwise sliding displacement of said nose plate is prevented, and wherein said nose plate comprises a spring tensioning wedge surface angled toward said ejection channel and a spring cocking wedge surface angled away from said ejection channel, said wedge

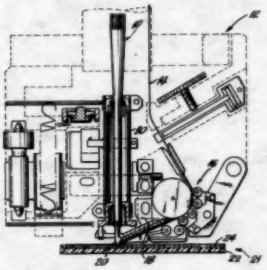
surfaces forming a ridge which provides a first spring stop (22), and a second spring stop (21) on said nose portion, said spring means being mounted in such a position on said apparatus that said spring means is received between said spring stops (21, 22) in a biased position, whereby said spring means simultaneously holds and biases said nose plate.

4,641,773

ULTRASONIC STYLUS POSITION STABILIZER

Ronald Morino, Seacliff, and Joseph A. Conti, Whitestone, both of N.Y., assignors to Kollmorgen Technologies Corp., Dallas, Tex.

Filed Aug. 9, 1985, Ser. No. 763,982
Int. Cl.[4] H01K *3/10*; B23K *1/06, 20/10*
U.S. Cl. 228—1.1 **11 Claims**



1. A positioning guide for stabilizing the lateral position of an ultrasonic stylus relative to a housing, the housing being positionable relative to a workpiece, comprising:

a stylus including a working tip;

a source of ultrasonic energy coupled to said stylus to cause longitudinal vibration therein;

means forming a hub secured to said stylus near said working tip;

a retainer secured to the housing;

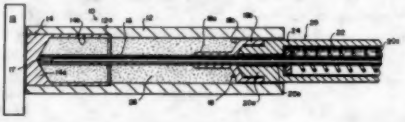
a plurality of spokes extending generally radially and secured between said hub and said retainer to provide lateral rigidity and longitudinal compliance for said working tip of said stylus relative to the housing.

4,641,774

FIXTURE FOR EXPLOSIVELY WELDING A TUBE TO A TUBESHEET

Myron Krawchuk, Newton, and Joseph C. Spoganetz, Carteret, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jul. 3, 1985, Ser. No. 751,646
Int. Cl.[4] B23K *20/08*
U.S. Cl. 228—2.5 **3 Claims**



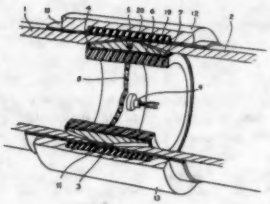
1. A fixture for explosively welding a tube to a tubesheet comprising a cup for inserting into said tube, said cup having an open end and a hollow interior, a plug extending within said cup to define therewith a chamber, said plug including a tubular portion extending in said chamber and having an internal bore, a first explosive extending within said chamber, a second explosive extending within said bore and separated from said first explosive by said tubular portion, said second explosive having a sensitivity greater than of said first explosive, an elongated detonation member extending within said bore and externally of said fixture for detonating said second explosive which in turn detonates said first explosive and a tubular insert extending in said bore for receiving and positioning said detonation member in said bore in intimate contact with said second explosive.

4,641,775

MEANS FOR SPLICING TWO PIPES

Göran Lande, Skärholmen, and Bendt Persson, Olofström, both of Sweden, assignors to Nitro Nobel AB, Gyttorp and AB Volvo, Gothenburg, both of, Sweden

Filed Apr. 23, 1985, Ser. No. 726,241
Claims priority, application Sweden, May 14, 1984, 8402584
Int. Cl.[4] B23K *20/08*
U.S. Cl. 228—2.5 **7 Claims**



1. In a means for splicing two pipes with the aid of explosion welding, each pipe having an end edge, the end edges facing each other and forming a splicing point, said means comprising a ring or tube for plating arranged inside the pipes and extending from the splicing point into each pipe, an explosive and detonator therefor, arranged internal to said ring or tube, and an external support having a cylindrical inner surface arranged at said splicing point, said inner surface substantially abutting the outer surfaces of the two pipes, said support having at least the axial extension of said ring or tube,

the improvement wherein said external support is removable and reusable, and comprises two halves of semicircular internal cross-section, and means for firmly joining together and unjoining said two halves, the inner surface of said support being provided with a circumferential recess which is at least partially filled with a resilient material, and which recess is positioned adjacent said splicing point, the dimensions of the recess and the properties of said resilient material being selected so that the deformation of the pipes when explosion welded will fall within the recess and deform said resilient material, without substantial deformation of the remainder of said support,

wherein said deformed resilient material will return to its original shape when said support is removed from said welded pipes, thereby making said support reusable, and

wherein a thin layer of metal is arranged between the inner surface of said support and the outer surfaces of said two pipes, said layer having a coherent or partially broken, inwardly directed flange located at said splicing point provided with at least one outwardly directed notch, and the ring or tube is provided with at least one outwardly directed spring activated pin adapted to cooperate with said at least one notch.

4,641,776

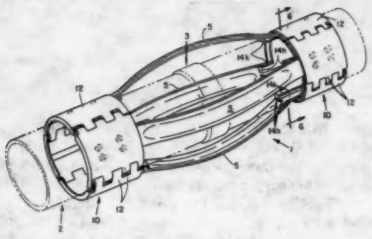
SEGMENTED CONCENTRIC CENTRALIZER

David J. Vlasek, Universal City, and Harry W. Riddle, San Antonio, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Division of Ser. No. 546,881, Oct. 31, 1983, abandoned. This application Aug. 15, 1985, Ser. No. 765,798

Int. Cl.[4] B23K *31/02*; **B21D** *41/02*

U.S. Cl. 228—155 **1 Claim**



1. The method of manufacture of a well conduit centralizer comprising first and second axially spaced collars extending around the well conduit and a plurality of axially extending bowed springs respectively attached at each axial end to the first and second collars, comprising the steps of:

(1) stamping a plurality of segments from a rectangular sheet to form an arcuate double walled configuration having hinge loops on each end of each segment pivotally interconnectable to form a continuous ring having an internal cylindrical surface of a diameter less than the external diameter of the well conduit;

(2) inserting the ends of each bowed spring between the walls of said double walled segment and welding each inserted end to both walls of the respective double walled segment;

(3) pivotally interconnecting all segments at each end of the bowed springs by inserting pins through said hinge loops to form said first and second axially spaced collars; and

(4) inserting an expandable mandrel within said collars and expanding the entire peripheral length of each collar to an internal diameter greater than the well conduit external diameter to provide a concentric, slidable fit of said collars upon the well conduit.

4,641,777

PRISMATIC CONTAINER OBTAINED FROM A FLAT CARDBOARD BLANK WITH A DIAPHRAGM END CLOSURE DEVICE FORMED BY STAMPING A PART OF THE FLAT BLANK

Domenico Fronduti, Città di Castello, Italy, assignor to Cartotecnica Tifernate S.p.A., Citta di Castello, Italy

Filed Jul. 11, 1984, Ser. No. 629,882

Claims priority, application Italy, Jul. 11, 1983, 35952/83[U]; Jul. 11, 1983, 35953/83[U]

Int. Cl.[4] B65D *5/32*

U.S. Cl. 229—110 **7 Claims**

1. At least one flat blank for forming a polygonal container, comprising:

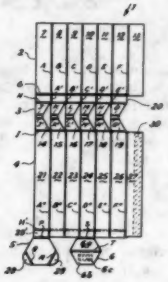
a first rectangular part sub-divided into equal rectangular panels by longitudinal parallel score lines, the first part including at one side a lateral flap of dimensions substantially equal to those of one of the panels and having an opposite face which can be joined by gluing to the panel situated at a side opposite from the lateral flap;

a second central part delimited from the first part by a transverse score line, and partially sub-divided into shaped panels each constituting a prolongation of a respecitve one of the panels of the first part, the shapes of the said shaped panels being defined by empty spaces in the form of isosceles trapezoids of equal dimensions, the longer bases of which are aligned with the parallel longitudinal score lines of the first part and the smaller bases of which have a minimum length, the second central part likewise having, in a portion thereof adjacent the first part, a further transverse score line and longitudinal score lines between the transverse score lines aligned with the corresponding longitudinal score lines of the first part, the shaped panels being transversely traversed in their median part by pairs of closely spaced parallel lines which intersect the ends of the smaller bases of the isosceles trapezoids;

a third part of generally rectangular shape and subdivided for the whole of its length by parallel longitudinal score lines aligned with the corresponding longitudinal score lines of the first part, into identical panels and into a second lateral flap of dimensions substantially equal to those of any of the said identical panels, the second flap being located at one side of the third part and adapted to be glued to a rear face of the identical panel situated at an opposite side from the second flap,

and projections foldable along transverse score lines which form sides for connection with suitable panels of the third part of the blank, the projections being adapted to form a transverse wall of the container when the first and third parts are erected with their flaps adhered to their respective panels to form a hollow polygonal cross-sectional container,

wherein a first one of the projections is connected to the



panel situated at the side opposite from the second flap, the first projection having a substantially trapezoidal form with the smaller angles rounded and including two inclined and symmetrical score lines such as to delimit a remaining part of the projection in such a way as to confer on the remaining part of polygonal form having sides of a length equal to the width of the individual longitudinal panels of the third part and equal in number thereto so that the remaining part is in the final configuration of an adjacent end of the container, and to define two lower lateral guide flaps which bend automatically along their respective score lines when the container is erected, for subsequently facilitating sliding movement of the remaining part within the container and insuring proper closure of the adjacent end of the container,

and wherein a second one of the projections is connected by means of a transverse score line to an edge of the panel which is opposite, during assembly of the blank to form the container, to the identical panel intended to be glued to the second flap, the second projection having a polygonal form having sides of a length equal to the width of the individual longitudinal panels and equal in number thereto so that the second projection also is in the final configuration of the adjacent end of the container, and the second projection being sub-divided into two halves by a transverse score line parallel to the edge of the third part of the flat blank, for folding the second projection in half, there

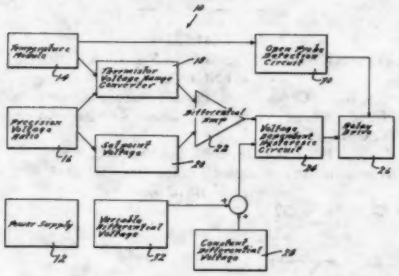
being provided on the half of the second projection not connected to the third part a region for the application of adhesive for gluing to the first projection.

4,641,778

ELECTRONIC WATER HEATER THERMOSTAT SYSTEM

David M. Dodson, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 8, 1985, Ser. No. 720,856
Int. Cl.[4] G05D *15/00*
U.S. Cl. 236—20 R **25 Claims**



1. An electronic water heater thermostat system for controlling the heating of water in a water heater having electrically operable fuel control means, said system comprising, in combination, temperature sensing means effective to detect the temperature of water in the water heater and generate a corresponding electrical signal indicative of the water temperature, temperature set point means having an output producing a voltage proportional to the desired set point temperature, differential amplifier means electrically connected to said temperature sensing means and to said temperature set point means and having an output providing a voltage representing the difference between the voltage of the temperature sensing signal and the output voltage of said set point means, differential voltage means, voltage dependent hysteresis means including comparator means having inputs connected to the output of said differential amplifier means and to said differential voltage means, said comparator means also having an output, an electrically operable switch means controlling the energization of said fuel control means, said switch means being electrically connected to the output of said comparator means.

4,641,779

CONCRETE GRADE CROSSING SYSTEM

Terrence X. O'Brien, 10513 Lake Steilacom Dr., and Dale E. McKennie, 10635 Lake Steilaccom Dr. South West, both of Tacoma, Wash. 98449

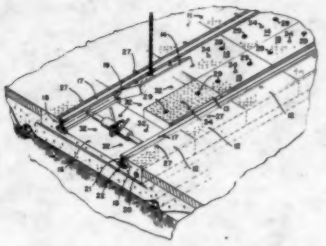
Filed May 10, 1984, Ser. No. 609,488
Int. Cl.[4] E01B *25/28*
U.S. Cl. 238—7 **1 Claim**

1. A method for making a railway crossing comprising positioning a plurality of base members end to end on a prepared rail bed, each of said base members being formed with a central recess extending between the transverse edges thereof and defining parallel walls of said central recess each being formed to conform generally to the shape of the outer surface of a rail;

providing a pair of rails, each having its base and web portions encased in a boot of elastomeric material;

positioning the boot-encased rails in the central recesses of the plurality of base members respectively abutting the walls of the central recesses;

positioning pairs of generally planar central rail-locking panels in abutting relation with the central recesses of the base members between the rails, one pair after another such that each pair is aligned with a base member, and forcing the boot-encased rails apart thereby compressing the elastomeric boots to enable the rail-locking panels to sit on the bottoms of said central recesses such that the boot-encased rails are forced into engagement with the



respectively associated walls of the central recesses and the central panels; and

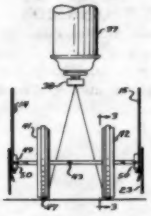
fastening the center panels to the base members such that the boot-encased rails are wedged into their proper positions.

4,641,780

SPRAYING APPARATUS

Thomas J. Smrt, 172 S. Northwest Hwy., Cary, Ill. 60013

Filed Jun. 29, 1981, Ser. No. 278,164
Int. Cl.[4] B05B *1/28*
U.S. Cl. 239—150 **8 Claims**



1. In a spraying apparatus having means for spraying material onto a surface to be sprayed, a pair of spaced-apart discs rotatably mounted on the spraying apparatus, the discs being engageable with the surface to be sprayed whereby the discs rotate over the surface as the spraying apparatus is moved over the surface, each of the discs including a circular wall and an axially extending flange which extends from the circular wall toward the other disc, each of the flanges having an axially extending outer edge and terminating in a radially inwardly extending retaining lip whereby the flange and the lip provide a well for material which is sprayed onto the flange, each of the discs including a radially outwardly extending rim which projects radially beyond said outer edge of the flange and which engages the surface to be sprayed whereby the outer edge of the flange is spaced from the surface by the rim, and a plurality of generally radially extending ribs on the circular wall for trapping material which is sprayed onto the disc.

4,641,781

COVERED FIELD SPRAYERS

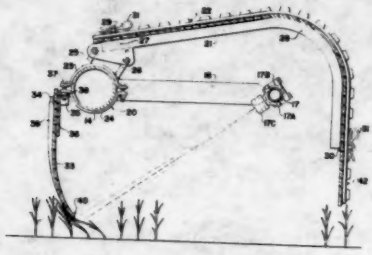
David G. McCrea, and Thomas E. McCrea, both of Box 993, Roblin, Manitoba, Canada (R0L 1P0)

Filed Jan. 17, 1985, Ser. No. 692,228

Claims priority, application Canada, Aug. 24, 1984, 461798

Int. Cl.[4] B05B 1/20

U.S. Cl. 239—159 **16 Claims**



15. A cover attachment for a field sprayer of the type having an elongate support frame, means supporting the support frame for transport in a forward direction transversely to its length, a liquid supply boom supported longitudinally of the support frame and a plurality of nozzles along the length of the boom for spraying the field, the cover attachment comprising frame means providing a plurality of arm members extending transversely to the length of the support frame and flexible sheet means for extending over said frame means to cover said nozzles, said flexible sheet means being formed from plastics material in sheet portions separated longitudinally of the support frame, the portions being arranged to overlap at and being connected to the arm members, and being supported solely at said arm members so as to be effectively self-supporting therebetween, wherein each sheet portion includes a plurality of ribs longitudinally thereof leaving at least one plane edge for overlapping the next adjacent sheet portion.

4,641,782

JET PROPULSION NOZZLE

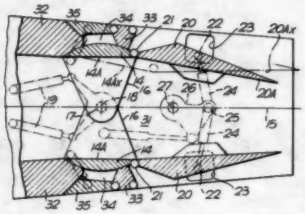
Clifford S. Woodward, Bristol, England, assignor to Rolls-Royce plc, London, England

Filed Feb. 18, 1982, Ser. No. 356,908

Claims priority, application United Kingdom, Feb. 24, 1981, 8105843

Int. Cl.[4] F02K 1/11, 1/12

U.S. Cl. 239—265.29 **5 Claims**



1. A jet propulsion nozzle comprising a pair of mutually confronting walls, a pair of mutually confronting first panels extending transversely between the walls, each first panel being supported on the walls for pivotal movement about a common first axis positioned between said pair of first panels and extending transversely between the walls, a pair of mutually confronting second panels extending transversely between the walls, each second panel being situated adjacent a respective one of said first pair of panels and being supported thereon for pivotal motion about a second axis parallel to said first common axis, said walls and panels defining between them a flow duct, first means for pivoting each of said first panels about the common first axis and second means for pivoting each of said second panels about the second axis, independently of any pivotal position of the first panels, thereby permitting the panels to be moved into positions wherein said duct becomes respectively convergent and a convergent-divergent, such that when said first panels are in a first position, the panels obturate thrust reverser openings and comprise the flow duct, and when said first panels are in a second position, the panels obturate said flow duct and comprise a thrust reverser.

4,641,783

EXHAUST NOZZLE ASSEMBLY FOR A TURBOJET ENGINE

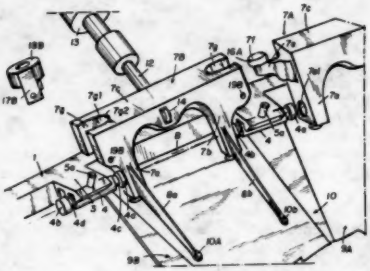
André A. M. L. Camboulives, Paris, France, assignor to Societe Nationale d'Etude et de Construction de Meteur d'Aviation (SNECMA), France

Filed Dec. 19, 1984, Ser. No. 683,365

Claims priority, application France, Dec. 21, 1983, 83 20437

Int. Cl.[4] B64C 9/38

U.S. Cl. 239—265.39 **19 Claims**



1. In a turbojet engine having an annular exhaust gas outlet duct with a central longitudinal axis, the improved exhaust nozzle assembly comprising:

(a) a plurality of hook members attached to the outlet duct and distributed evenly about the circumference of the outlet duct each hook member defining a generally "U" shaped slot extending across the width of the hook member, each generally "U" shaped slot having a first surface extending generally perpendicular to the central longitudinal axis and an adjacent second surface extending generally perpendicular to the first surface;

(b) a plurality of first nozzle flaps distributed about the circumference of the outlet duct;

(c) a journal shaft having two adjacent perpendicular surfaces, the length of the journal shaft exceeding the width of the hook members;

(d) attachment means to attach a journal shaft to each hook member such that the perpendicular surfaces on the shaft contact the first and second surfaces of the hook member slot;

(e) cylindrical bearing means on each end of the journal shaft;

(f) a plurality of control lever members operatively connected to selected nozzle flaps and pivotally attached to the cylindrical bearing means such that each control lever member pivots about an axis extending generally perpendicular to the central longitudinal axis;

(g) ball joint means interconnecting adjacent control lever members so as to synchronize the movement of the control lever members and to permit variation in the distance

between adjacent control lever members as they pivot about their axes; and,

(h) a plurality of control cylinder means each having a stationary portion attached to the outlet duct and a movable portion attached to a control lever member such that the angle of the nozzle flaps with respect to the central longitudinal axis may be adjusted.

4,641,784

FUEL INJECTION NOZZLES

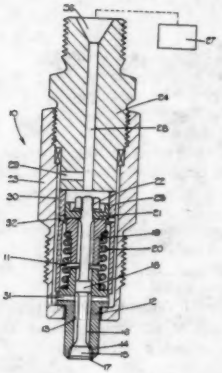
Peter Howes, Gerrards Cross, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Apr. 25, 1984, Ser. No. 603,909

Claims priority, application United Kingdom, Jun. 8, 1983, 8315717

Int. Cl.⁴ F02M *61/00*

U.S. Cl. 239—453 **5 Claims**



1. A fuel injection nozzle through which fuel can be supplied to a combustion chamber of an internal combustion engine, the nozzle being of the so-called outwardly opening type and comprising a valve member slidable in a bore, the valve member having a head shaped to co-operate with a seating, resilient means biasing the valve member to a closed position in which the head is in sealing engagement with the seating and in which the flow of fuel from an inlet to an outlet is prevented, a hollow skirt member defining a cylinder, means defining a piston slidable within said cylinder between a first position and a second position, a port in said skirt member through which fuel can flow into and out of a chamber defined by said cylinder and said means defining said piston, said port in use being progressively covered by said piston as the valve head lifts away from the seating to be closed when said piston is in said second position to close said chamber and trap fuel in said closed chamber, the fuel in said closed chamber forming a liquid spring acting to assist the action of said resilient means.

4,641,785

FLAT JET NOZZLE FOR COOLANT SPRAYING ON A CONTINUOUSLY CONVEYED BILLET

Horst Grothe, Kaarst, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag AG, Fed. Rep. of Germany

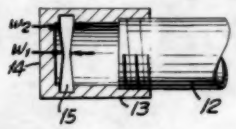
Filed Jul. 8, 1985, Ser. No. 752,939

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1984, 3425092

Int. Cl.⁴ B22D *11/124*

U.S. Cl. 239—597 **5 Claims**

1. In a flat jet nozzle for coolant spraying of a continuously conveyed billet, particularly in slab form, with a wide angle spray along a width of said billet, said flat jet nozzle being formed with a cylindrical wall having means defining in said cylindrical wall a discharge slot extending in the circumferential direction of said cylindrical wall, said slot having a middle and outer sides, the improvement comprising that said discharge slot is formed with a width which increases from said middle of said slot to said outer sides thereof.



4,641,786

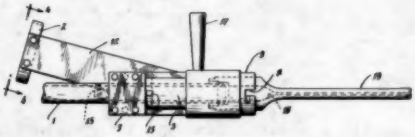
NOZZLE FOR CRYOGENIC CLEANING APPARATUS

David E. Moore, Cincinnati, Ohio, assignor to Cryoblast, Inc., West Haven, Conn.

Filed Dec. 14, 1984, Ser. No. 682,262

Int. Cl.⁴ B05B *7/14*; B24C *5/04*

U.S. Cl. 239—590 **3 Claims**



1. A nozzle for directing pellets at a body to be cleaned, said pellets formed of a solid state material which sublimes to a vapor state after impact with the body, comprising:

(a) an elongated, demountable, nozzle body having a pellet entrance constriction thereof;

(b) a support means for demountably receiving and supporting said nozzle body;

(c) means for conveying pellets to said support means for acceleration toward said constriction;

(d) said constriction having a limiting passage which is smaller in cross-sectional area than pellets conveyed to said nozzle body whereby said pellets are fractured upon impact with said constriction and are accelerated to a sonic velocity.

4,641,787

METHOD OF COMMINUTING RARE EARTH POWDER FOR PRODUCING RARE EARTH MAGNET

Christian C. Petersen, Westwood, and Ernst C. Wettstein, Acton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 26, 1983, Ser. No. 535,867

Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—5 **13 Claims**

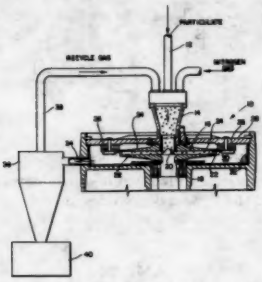
1. A method of comminuting rare earth metallic particulate comprising the steps of:

impacting the particulate against at least one impacting surface in a treatment zone by projecting the particulate under centrifugal force against said surface at a velocity sufficient to cause comminution of at least a portion of the particulate;

maintaining at least the treatment zone and the impact surface in a temperature range which inhibits oxidation of the particulate while promoting fracture of the particulate; and,

employing an inert gaseous medium in the treatment zone to

prohibit combustion of the impacted particulate and having significantly low concentrations of oxygen and water



vapor so as to substantially eliminate oxidation of the particulate.

4,641,788

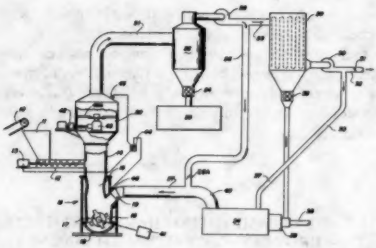
METHOD OF SIMULTANEOUSLY GRINDING COAL AND DOLOMITE

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Division of Ser. No. 449,438, Dec. 13, 1982, abandoned. This application Nov. 16, 1984, Ser. No. 672,067

Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—14 **9 Claims**



1. A method of reducing coal and dolomite, each having its own hardness characteristic, the coal and dolomite being simultaneously reduced in a common impact mill to prepare a common charge of a mix thereof having a particle size as a fuel for combustion, said method comrising the steps of:

(a) mixing the coal and dolomite initially in a predetermined volumetric ratio in the impact mill, thereby forming a common charge of coal and dolomite;

(b) impacting the common charge of coal and dolomite, thereby reducing the size of the coal and dolomite;

(c) retaining a portion of the common charge of coal and dolomite during the impacting step in the mill to absorb a portion of the impact energy applied to the coal and dolomite, thereby minimizing the formation of extreme fines; and

(d) collecting the common charge of coal and dolomite after the impacting step.

4,641,789

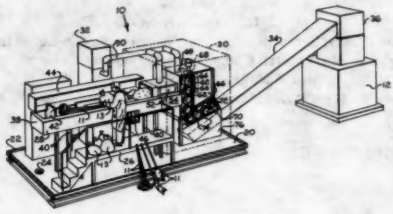
COMPACTOR ENHANCEMENT SYSTEM

Robert L. Moscardini, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 27, 1983, Ser. No. 565,601

Int. Cl.⁴ B02L *23/02, 23/04*

U.S. Cl. 241—31 **16 Claims**



1. Apparatus for treating contaminated articles, at least some of the articles to be treated having a low-level of radioactivity, said apparatus preparing the contaminated articles for compaction and comprising:

an inner housing;

shredder means disposed within said inner housing for reducing contaminated articles fed into said inner housing into fragments;

feeder means for delivering articles into said inner housing for fragmentation by said shredder means, said feeder means defining a first extension of said inner housing, said feeder means including:

an article receiving;

cover means for said trough, said cover means opening said trough to the ambient atmosphere when in an open loading condition and hermetically sealing said trough from the ambient atmosphere when in the closed feeding condition; and

ram means, said ram means cooperating with said trough to force feed articles disposed therein into said inner housing for fragmentation by said shredder means when said cover means is in the closed condition;

conveyor means, said conveyor means defining a second extension of said inner housing, said conveyor means receiving and transporting said fragments away from said inner housing;

means for maintaining a pressure within said inner housing and said first and second extensions thereof which is less than the ambient atmospheric pressure when the apparatus is in use; and

air lock means for discharging said fragments from said conveyor means for subsequent compaction.

4,641,790

SYSTEM FOR WASTEPAPER PROCESSING USING A WASH FILTER

Walter Musselmann, Heidenheim, and Helmut Konecsny, Giengen, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Dec. 12, 1984, Ser. No. 680,740

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345548

Int. Cl.⁴ D21B *1/32;* D21C *5/02*

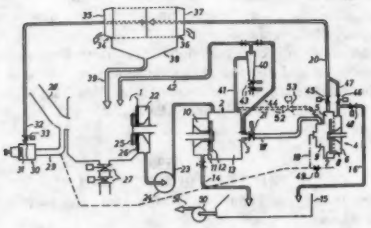
U.S. Cl. 241—46.17 **2 Claims**

1. A system for wastepaper processing with a primary pulper containing fiber suspension comprising:

a wash filter, said wash filter including a generally round agitating space and an accepted stock space, said accepted stock space being separated from said agitating space by an essentially flat screen, an agitating wheel positioned within said agitating space upstream of said flat screen,

said wash filter further including a generally round entrance space;

a plurality of connector lines, one of said connector lines being tangentially connected to the entrance space, said one connector line placing said primary pulper in communication with the entrance space whereby fiber suspension is tangentially received into the entrance space, another of said connector lines having a diameter and being axially connected to the center of an end side of said entrance space, the diameter of the end side being greater than the diameter of said other connector, said other connector



placing the entrance space in communication with a source of wash water whereby the wash water is axially received into the entrance space;

the diameter of said entrance space is between about 40 percent and about 70 percent smaller than the diameter of said agitating space, and the ratio of the width to the diameter of the agitating space being between about 0.15 and about 0.35; and

said entrance space being connected through a hydrocyclone to the primary pulper, and a tailing removal line communicating with and extending from said agitating space of said wash filter.

4,641,791

APPARATUS FOR MATERIAL GRINDING

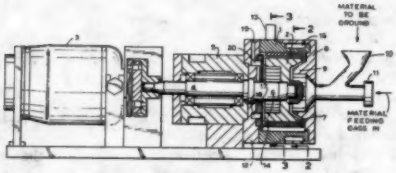
Atanas S. Cermanov; Ljubomir R. Kazarov; Marco S. Valev; Jelyazco C. Jelyazcov, and Rusy C. Kolev, all of Stara Zagora, Bulgaria, assignors to N P S P "Desintegrator", Stara Zagora, Bulgaria

Filed May 13, 1985, Ser. No. 733,623

Claims priority, application Bulgaria, May 11, 1984, 65474

Int. Cl.[4] B02C *13/10*

U.S. Cl. 241—66 **3 Claims**



1. An apparatus for grinding materials comprising a cylindrical casing in which, along its axis, a rotor in the shape of a disc is mounted, the disc being driven by a prime mover and having pins evenly distributed along its circumference on both of its sides, the casing having a plurality of holes in it, one of the holes in the casing being closed by a fixed front cover having a receiving neck disposed along its axis, counter-pins located on the inside of the casing and evenly distributed along its circumference, another casing hole, on the prime mover side of the casing, being closed by a fixed back cover, and an outgoing hole in the casing disposed between the disc and the back cover, a first bushing enveloping the rotor, the first bushing being firmly fixed to the casing and having longitudinal races located on the rotor side, circumferentially closed cooling races on the external side of the casing and on the radially outer side of the bushing, and on the inside of the casing in a second bushing firmly fixed to the back cover there is provided a common concentric rectangular coolant receiving race connected to the atmosphere by a plurality of spaced output radial races disposed in the back cover, the common coolant receiving race being connected to the inner space of the casing by a plurality of evenly spaced outgoing radial races located in the bushing.

4,641,792

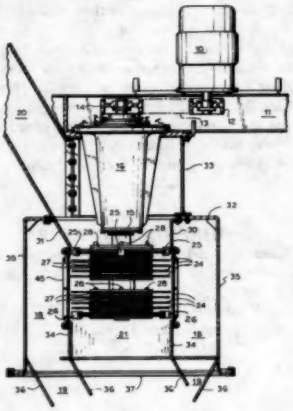
FIBER DEPITHER

Eduardo J. Villavicencio, San Angel, Mexico, and Jorge E. Arana, Bethesda, Md., assignors to Process Evaluation and Development Corporation, Dallas, Tex.

Filed Oct. 22, 1984, Ser. No. 663,590

Int. Cl.[4] B02C *13/28*

U.S. Cl. 241—74 **7 Claims**



1. An improved depithing device comprising an inlet to permit the flow of fiber into a circular chamber having a perforated wall structure, an outlet from said circular chamber, a rotor carrying an upper plurality of blades and a lower plurality of blades centered for rotation within said circular chamnber, means to rotate said rotor, and a chamber surrounding said circular chamber and adapted to receive material passing through the perforated wall of said circular chamber; the improvement comprising said rotor having a separated upper and a lower plurality of blades; the uppermost blades of said upper plurality of blades being feeder blades having an end surface area at least 2 times the end surface area of the remaining blades; and the lowermost blades of said lower plurality of blades being fan blades wherein the outer end of said blades have a ratio of height to width of at least 5.

4,641,793

THREAD WINDING MACHINE AND METHOD OF PERFORMING AUTOMATIC CHANGEOVER OF WINDING OF A THREAD

Adolf Flüeli; Heinz Oswald, and Kurt Schefer, all of Winterthur, Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Apr. 16, 1985, Ser. No. 723,981

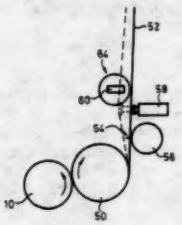
Int. Cl.[4] B65H *54/02, 67/04*

U.S. Cl. 242—18 PW **4 Claims**

1. A thread winding machine, comprising:

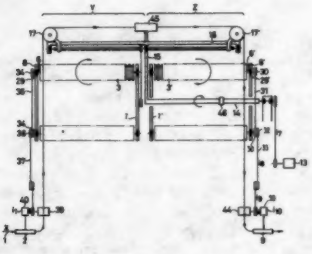
at least one chuck rotatable about a longitudinal chuck axis

and capable of receiving at least one bobbin tube at a predetermined location thereon for rotation therewith;
a thread catching device in said at least on chuck adjacent said predetermined location;
guide means operable to engage a thead with said at least one chuck near said catching device;
means for moving said guide means axially of said at least one chuck in order to move the thread into said thread



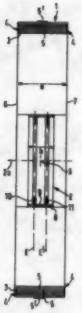
catching device and from said thread catching device onto said predetermined location;
said moving means being arranged relative to said at least one chuck and containing structure for moving said guide means at a first speed when moving the thread from said catching device onto said predetermined location and for moving said guide means at a second speed when moving the thread into said thread catching device; and
said first speed being higher than said second speed.

4,641,794
WIRE ACCUMULATOR
Takashi Yamazaki, and Katsuji Sakamoto, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Nov. 7, 1984, Ser. No. 669,153
Claims priority, application Japan, Nov. 8, 1983, 58-210572
Int. Cl.[4] B65H *51/22*
U.S. Cl. 242—47.01 **4 Claims**



1. A wire accumulator, comprising:
first and second coaxially disposed assemblies of accumulating guide rollers having equally pitched grooves;
first and second drive means for respectively rotatably driving said accumulating guide rollers;
a shaft extending through one of said assemblies;
guide bar means rotatable with said shaft so as to orbit about said assemblies;
a first variable speed motor for rotating said shaft;
distributing guide rollers movably mounted on said guide bar means and orbited about said assemblies by said first variable speed motor, for winding a traveling wire on said assemblies or unwinding said wire therefrom;
a first take-up device driven by said first drive means for receiving said wire from a source thereof;
a second take-up device driven by said second drive means for delivering said wire;
means for rotationally interconnecting said first assembly, said first drive means and said first take-up device so that a wire take-up speed of said first take-up device is equal to a peripheral speed of said accumulating guide rollers of said first assembly;
means for rotationally interconnecting said second assembly, said second drive means and said second take-up device so that a wire take-up speed of said second take-up device is equal to a peripheral speed of said accumulating guide rollers of said second assembly;
a tension and speed control device provided between said distributing guide rollers for transmitting a tension and speed control signal; and
means, responsive to said signal, for controlling the orbital speed of said distributing guide rollers around said assemblies or the speed of rotation of said second set of accumulating guide rollers in accordance therewith.

4,641,795
PRINTED PRODUCT COIL
Werner Honegger, Tann-Rüti, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
PCT No. PCT/CH84/00147, § 371 Date May 10, 1985, § 102(e) Date May 10, 1985, PCT Pub. No. WO85/01279, PCT Pub. Date Mar. 28, 1985
PCT Filed Sep. 19, 1984, Ser. No. 732,585
Claims priority, application Switzerland, Sep. 19, 1983, 5068/83; May 9, 1984, 2267/84
Int. Cl.[4] B65H *75/02, 16/02;* **B21C** *47/24;* **B65G** *65/00*
U.S. Cl. 242—59 **10 Claims**



1. A printed product coil, comprising:
a cylindrical winding core;
printed products wound-up upon said cylindrical winding core;
said printed products having at least one open edge;
a winding band maintained under tension and wound in between the winding layers; and
said cylindrical winding core having a lesser width than said printed products to be wound up and being recessed at both ends thereof in relation to end faces of the printed product coil.

4,641,796
AIRFOIL
Winfried M. Feifel, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 30, 1983, Ser. No. 537,843
Int. Cl.[4] B64C *3/14*
U.S. Cl. 244—35 R **38 Claims**

1. An airfoil having a leading edge, a trailing edge, an upper surface, a lower surface, a chord-wise axis and a spanwise axis,

said airfoil comprising at a chord-wise location on said span-wise axis:

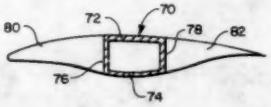
a. a substantially uniterrupted upper skin member defining said upper surface and being aerodynamically contoured to form a flow pattern over the upper surface to produce an upward lift;

b. a substantially uniterrupted lower skin member defining said lower surface, said lower skin member comprising:

1. a first forward lower surface portion extending rearwardly from said leading edge to a first inflection point;

2. a second transitional lower surface portion extending rearwardly from said first surface portion at said first inflection point to curve concavely downwardly to a second inflection point, said second inflection point being located rearwardly from said leading edge at a distance between one-quarter to four-tenths of a chord length of said airfoil at said chord-wise location;

3. a third belly lower surface portion extending rearwardly from said second lower surface portion at said



second inflection point to curve convexly to form a downwardly expanded belly section of said airfoil;

4. a fourth trailing edge lower surface portion extending from said third lower surface portion to said trailing edge;

c. said lower surface portions being contoured to form a flow pattern where flow along said first and second lower surface portions is at an average lower velocity, and flow along said third lower surface portion is at a relatively higher average velocity, in a manner that relatively greater lifting force is exerted at the first and second lower surface portions, and relatively less lifting force is exerted at the third lower surface portion;

d. a primary load bearing structure located primarily in the belly section of the airfoil;

whereby said airfoil is aerodynamically contoured to function effectively aerodynamically, and yet provide relatively greater airfoil thickness at said belly section to enable said primary load carrying structure to have a relatively large height dimension.

4,641,797

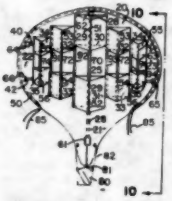
HOT AIR BALLOON KITE

Richard D. Stolk, 259 Braeshire Dr., Manchester, Mo. 63011

Filed May 3, 1984, Ser. No. 606,866

Int. Cl.⁴ B64C *31/06*

U.S. Cl. 244—153 R **10 Claims**



1. A kite comprising:

a. a flat balloon silhouette-shaped cover having a vent,

b. a plurality of vertical cover longerons,

c. a plurality of horizontal cover spars,

d. a semi-rigid member around the leading perimeter edge of the cover,

e. a plurality of leading triangular cells, of diminishing size proceeding from vertical center line horizontally toward the edge, positioned symmetrically about the vertical center line of the cover, each cell having its rear surface on the cover, and its apex edge parallel to the cover,

f. a plurality of trailing triangular cells, of diminishing size proceeding from the vertical center line horizontally toward the edge, positioned symmetrically about the vertical center line of the cover, each cell having its rear surface on the cover, and its apex edge parallel to the cover, and

g. a plurality of cell longerons attached to the apex edges of any leading and trailing triangular cells which are in the same planes.

4,641,798

SYSTEM FOR RETAINING OR RELEASING SPACECRAFT SOLAR PANELS

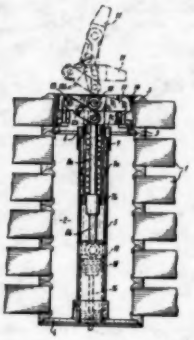
Frans W. De Haan, De Hoef; Jan Wynia, Espel, and Rob Zwanenburg, Alphen A.D. Rijn, all of Netherlands, assignors to Fokker B.V., Netherlands

Filed Feb. 6, 1985, Ser. No. 698,620

Claims priority, application Netherlands, Feb. 6, 1984, 8400362

Int. Cl.⁴ B64G *1/44*

U.S. Cl. 244—173 **9 Claims**



1. A system for retaining or releasing a number of relatively flat panels piled onto a supporting structure such as solar panels or a spacecraft which are mutually pivotably zigzag wise connected and can be deployed from the piled condition to an unfolded condition and can be refolded from the unfolded condition into the piled condition, which panels each comprise a number of passages at a distance of the side edges of each panel defining a number of channels through the piled panels, the system comprising one or more retainers each attached to the supporting structure and extending through one of said channels, each retainer comprising operating elements coupled to control means attached to the supporting structure and coupled to one or more seizing elements which under control of said control means and through said operating elements can be moved telescopically in the direction of said channels away from the panels over a predetermined distance and can thereafter be brought from a retaining condition, in which they seize the outer panel of the pile, to a releasing condition in which they do not obstruct the deploying movement of the panels in relation to the supporting structure, which seizing elements after refolding the panels into a pile adjacent to the supporting structure and through proper functioning of the control means and through said operating elements can be brought from the releasing condition into the

retaining condition and thereafter can be moved telescopically in the channel direction over said predetermined distance towards said panels.

4,641,799

ARRANGEMENT FOR CONTROLLING THE AIR FLOW OVER AERODYNAMIC PROFILES

Armin W. Quast, and Karl H. Horstmann, both of Brunswick, Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 582,142, Feb. 24, 1984, abandoned, which is a continuation of Ser. No. 318,697, Nov. 6, 1981, abandoned. This application Aug. 21, 1985, Ser. No. 768,166

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043567

Int. Cl.[4] B64C *21/02*

U.S. Cl. 244—207 **7 Claims**

1. In a wing or blade having an aerodynamic profile and designed for use under laminar air flow conditions at a Reynolds number lower than 3×10^6, the wing or blade having a profile surface which at a limited region between the leading and trailing edges of the wing or blade normally gives rise to a separation bubble disrupting the laminar air flow over that profile surface;

an arrangement for preventing the formation of the separation bubble, comprising:

at least one row of fluid discharge orifices arranged only in said limited region of the profile surface, the orifices in said at least one row being spaced from one another substantially along the longitudinal direction of the wing or blade;

said discharge orifices having a diameter of less than 1 mm and a discharge coefficient $C_Q=v/(FV)$ of less than 10^{-4} where v is the volume flow of air or like fluid through the discharge orifices, F is the area of the surface of the wing or blade, and V is the velocity of the air flow over the wing or blade; and

means in said wing or blade for directing air or like fluid to said discharge orifices from the interior of the wing or blade under a pressure sufficient to cause an outflow of the air or fluid through said discharge orifices at a velocity and volume flow rate sufficient to cause increased turbulence in the air flow over the wing or blade in said limited region of the profile surface for avoiding the formation of the separation bubble.

4,641,800

TANDEM OR MULTI-WINGED HIGH PERFORMANCE AIRCRAFT

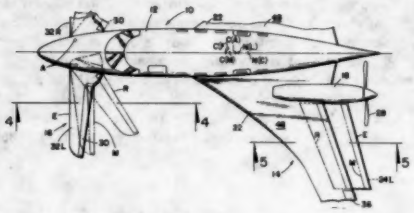
Elbert L. Rutan, Hangar 73, Mojave Airport, Mojave, Calif. 93501

Filed Aug. 18, 1983, Ser. No. 524,332

Int. Cl.[4] B64C *3/54, 3/40*

U.S. Cl. 244—218 **23 Claims**

1. A tandem or multi-winged aircraft comprising: a fuselage; primary and secondary wing systems attached to said fuselage for supplying positive lift thereto; propulsion means for generating a forward thrust, said fuselage, wing systems and propulsion means cooperating to define a center of gravity and a neutral point having a spaced relationship to one another effective to maintain stable flight, said secondary wing system having an average positive lift per unit area greater than the average positive lift per unit area of said primary wing system, said secondary wing system being mounted forwardly of said primary wing system, said secondary wing system including a pair of wing elements pivotally movable fore and aft relative to said fuselage between a retracted position swept aft to define a sweep angle bearing an acute angular relationship to the latter and an extended forwardly swept position in which said sweep angle is substantially increased, said primary wing system including at least one pair of fixed primary wing elements, said secondary wing elements and said one pair of primary wing elements both having a positive net lift; area-increasing means



operatively associated with said one pair of primary wing elements located aft of said center of gravity, said area-increasing means being effective upon independent actuation to vary said spaced relationship between said center of gravity and neutral point; and control means operatively interconnecting said area-increasing means in all operative positions of the latter so as to simultaneously vary the sweep angel of said secondary wing elements and coordinate movement thereof with that of said area-increasing means to the extent required to at least substantially maintain said predetermined spaced relationship.

4,641,801

TERMINALLY GUIDED WEAPON DELIVERY SYSTEM

David D. Lynch, Jr., 18651 Gledhill St., Northridge, Calif. 91324, and William H. Bell, c/o Federal Corrections Institution, Springfield, Mo. 65802

Continuation of Ser. No. 755,533, Jul. 15, 1985, abandoned, which is a continuation of Ser. No. 371,636, Apr. 21, 1982, abandoned. This application Jan. 22, 1986, Ser. No. 821,865

Int. Cl.[4] F41G *7/30*

U.S. Cl. 244—3.14 **1 Claim**

1. A weapon system for providing terminal guidance to a projectile which rotates about its longitudinal axis during flight and which responds to a command signal so as to modify the flight path in such a manner as to decrease the magnitude of the miss vector between the projectile and a target, said weapon system comprising:

means for tracking the target and providing tracking signals indicative of the location of the target;

means for lauching said projectile;

means for computing the location of said projectile after launch and for providing trajectory signals indicative of the trajectory of said projectile;

a canted linearly polarized antenna and a transmitter beacon both carried by said projectile such that transmitter beacon energy is transmitted from said antenna, whereby said energy is polarization modulated as a function of the angular orientation of said projectile;

means, responsive to the polarization modulated transmitter

beacon energy, for measuring the relative angular orientation of said projectile about said axis; and

means responsive to said tracking signals, said trajectory signals and to the measured angular orientation of said projectile for computing an uncorrected miss vector and for providing a command signal, during the terminal phase of flight of said projectile, so as to cause a decrease in the magnitude of the miss vector.

4,641,802

PROJECTILE STABILIZATION SYSTEM

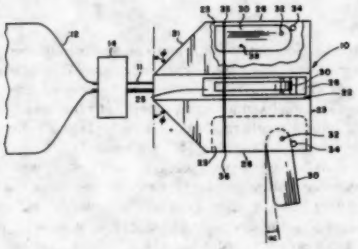
Seev W. Zalmon, Haifa; Shlomo Engel, Rishon Le Zyon, and Joseph Eyal, Ramat-Hasharon, all of Israel, assignors to The State of Israel, Ministry of Defence, Israel Military Industries, Israel

Filed Aug. 8, 1984, Ser. No. 638,769

Claims priority, application Israel, Jun. 4, 1984, 72000

Int. Cl.⁴ F42B *13/32, 15/053*

U.S. Cl. 244—3.28 **5 Claims**



1. A system for stabilizing a projectile which is propellable by gas pressure out of a bore of a firing device toward a target, the system comprising:

a plurality of fixed fins arranged aft of the projectile and extending outwardly from a core, each fixed fin defining a pocket which extends inwardly from a top side of the fixed fin; and

a plurality of folding fins each pivotably accommodatable in the pocket of a fixed fin, with each folding fin being totally within a pocket when in the folded state and being pivotable to assume an unfolded state where a substantial portion of the folding fin is out of said pocket when said projectile and system exit the device's bore, each of said folding fins being adapted to unfold in a sense opposed to the flight direction of said projectile,

wherein each of the folding fin is adapted to unfold as a function of a moment applied to the folding fin, the moment M' being definable as $M' = \Delta p \cdot A \cdot l$ wherein $\Delta p = \frac{1}{2}\rho_g (V_g - V_p)^2$, ρ_g is the average density of the propellant gas, V_g is the gas velocity after exiting the bore, V_p is the projectile velocity after exiting the bore, A is the area of the top surface of the folding fin and 1 is the distance between a pivot pin about which the folding fin pivots and the fin's center of gravity.

4,641,803

TRACK CIRCUIT

Christopher R. Brown, and Humphrey Roachsmith, both of Wiltshire, England, assignors to Westinghouse Brake and Signal Company Limited, Great Britain

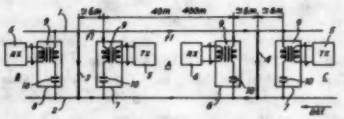
Filed Jan. 23, 1985, Ser. No. 693,914

Claims priority, application United Kingdom, Jan. 30, 1984, 8402359

Int. Cl.⁴ B61L *21/00*

U.S. Cl. 246—34 CT **5 Claims**

1. A railway track circuit arrangement of the kind used for railway vehicle detection in which an electrical A.C. signal of predetermined frequency is carried by the track rails to establish one or more track circuits in said track rails, said track rails being electrically continuous with each of said track circuits being electrically isolated from said other track circuits in adjacent track sections by an A.C. electrical signal separation zone, said zones at opposite ends of each of said track sections and spatially separated along said track by a first distance equal to the length of the intervening track circuit section, each of said signal separation zones being defined by, in combination, electrical shorting means connected between said track rails, a capacitor and an inductor in series also connected between said



rails at points on opposite sides of said shorting means and spaced therefrom by a second distance, said second distance being substantially shorter than said first distance and selected to provide that an electrical signal loop formed at one end of said track section by the respective shorting means, capacitor, inductor and intermediate lengths of said track rails is resonant at a predetermined signal frequency of said section, and wherein said shorting means consists of a pair of low impedance conductors connected between said track rails at points spaced from each other by a third distance.

4,641,804

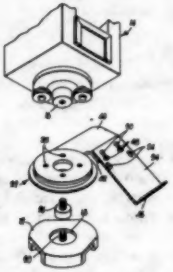
ARTICLE SUPPORTING BRACKET FOR SURVEY TRIPOD

Robert H. Martin, Overland Park, Kans.; Bradley J. Rozelle, and Thomas J. Breier, both of Kansas City, Mo., assignors to The Lietz Company, Shawnee Mission, Kans.

Filed Apr. 8, 1985, Ser. No. 720,801

Int. Cl.⁴ A47F *5/02*

U.S. Cl. 248—205.1 **1 Claim**



1. In combination:

a support tripod having an instrument-supporting head adjacent the upper end thereof and including an uppermost instrument-supporting face, said head presenting in said uppermost face a circular recess and a central, upstanding, threaded stud member within said recess;

a surveying instrument having an underside presenting a depending boss adapted to fit within said recess, said boss having a central, threaded opening adapted to threaded opening adapted to threadably receive said stud;

a bracket assembly interposed between and interconnecting said tripod head and instrument, said bracket assembly including—

a flat annular baseplate having a depending central flange received within said recess;

a top ring clamped to said baseplate, there being a central upright opening cooperatively defined by the top ring and baseplate and an unobstructed outboard annular space between said top ring and baseplate;

a connector element within said annular space for clamping said instrument underside to said top ring, said connector element having a lower threaded boss receiving said stud and an upper threaded element received within said boss;

an annular collar located within said annular space and freely rotatable at all times relative to said baseplate and top ring,

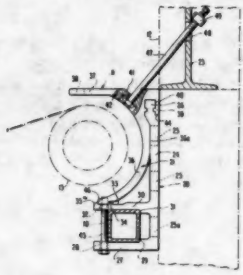
a plate extending outwardly from said collar and rotatable therewith; and an elongate shelf coupled by coupling means with the outer end of said plate and oriented at a downward angle relative to said collar for supporting an article and allowing the user to freely rotate the article as desired about a full 360° around said instrument, said coupling means including structure for axial adjustment of said shelf.

4,641,805

AWNING SUPPORT SYSTEM

Olof Martensson, IV, Annapolis, Md., assignor to Awnings Unlimited, Inc., Annapolis, Md.

Filed Oct. 23, 1985, Ser. No. 790,438
Int. Cl.[4] E04F *10/02*
U.S. Cl. 248—273 **11 Claims**



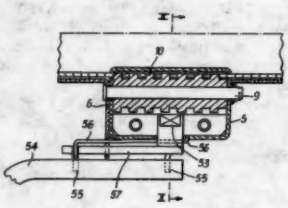
1. A support system for a lateral arm awning having an elongated horizontal main support tube, said support system comprising first and second interengaged separable extruded mounting bracket components, the first mounting bracket component comprising a vertical wall having a connector head at its upper end and a pair of vertically spaced horizontal plate extensions on the vertical wall near the lower end of the first mounting bracket component, said plate extensions receiving said main support tube between them, said second mounting bracket component comprising a forwardly concave arcuate wall disposed immediately forwardly of said vertical wall and having a lower end pad engaging a top surface portion of the uppermost one of said plate extensions, said pad having a vertical threaded opening formed therethrough, said plate extensions being apertured and the apertures receiving a vertical screw immediately forwardly of the main support tube and having threaded engagement in said threaded aperture of said pad, a downwardly open yoke carried by said second mounting bracket component at its top and rear side and substantially at the top of said arcuate wall, said yoke having a connector passage receiving and having interlocking engagement with the connector head of the first mounting bracket component, a substantially horizontal top wall on the second mounting bracket component projecting forwardly of said arcuate wall and main support tube, and an inclined axis suspension bolt for the support system received through an inclined axis aperture of the second mounting bracket component near the top of said arcuate wall and forwardly of said yoke.

4,641,806

SCREW SLIDE SYSTEM HAVING A MANUAL OR ELECTRIC CONTROL OR THE LIKE

Yves Pipon, and Georges Droulon, both of Flers, France, assignors to A. M. Cousin & Cie, Flers, France

Filed Jun. 10, 1985, Ser. No. 743,072
Claims priority, application France, Jun. 15, 1984, 84 09419
Int. Cl.[4] F16M *13/00*; F16H *57/10*
U.S. Cl. 248—430 **6 Claims**



1. A controlled screw slide system comprising two fixed lower members (1) and two upper members (4), a gear-down mechanism (25, 40) rigidly connected to one of the upper members (4), each fixed lower member (1) having an inner face provided with a toothing forming a rack (2) and being separated from an upper member (4) by elements (3) facilitating a respective sliding of the two sections, said system wherein:

(i) reversible endless screws (10) are mounted on a shaft able to rotate freely with respect to the rack (2), said endless screws 10 being connected by a train of gears (17, 18 and 18*a*) to a power transfer box (24, 39) rigidly connected to the gear-down mechanism (25, 40) by angle transmissions (19, 20), to a balancing shaft (21 or 41) for balancing rotation of said endless screws (10) in order to allow the two members to work in conjunction in order to displace a seat attached on said upper members;

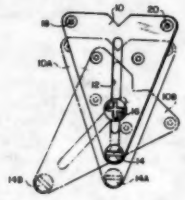
(ii) said endless screws (10) are blocked in the position chosen for the seat by shoes (50, 51) with inclined upper sections (50*a*, 51*a*) normally pressed against each other by springs (58) and unlocked by flat portions (53) of a bar (52) having a controlled rotation, the seat being manually displaced.

4,641,807

THREE-DIMENSIONALLY ADJUSTABLE PICTURE HANGER

Orville Phillips, 524 E. 20th St., #5D, New York, N.Y. 10009

Filed Aug. 23, 1985, Ser. No. 768,796
Int. Cl.[4] A47G *1/24*
U.S. Cl. 248—480 **10 Claims**



1. An adjustable suspension support position picture hanger which is adjustable in three dimensions to thereby adjust the suspension position up and down, side to side and inwardly and outwardly with respect to a mounting point comprising: (1) a body plate having a front surface and a rear surface, having an

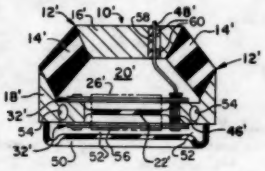
elongated slotted opening to receive a mounting screw at a mounting point upon a wall, and having a stud protruding from said front surface to provide the suspension support for hanging a picture; and (2) a wall mounting screw, adapted to pass through said slotted opening in said body plate and to attach said body plate to a wall at said mounting point; said body plate being rotatable about said mounting screw and translatable through movement with respect to said mounting screw along said slotted opening to thereby adjust the position of said stud at different suspension support positions.

4,641,808

DYNAMIC VIBRATION ATTENUATOR UTILIZING INERTIAL FLUID

Wallace C. Flower, 8654 Maplecrest Dr., McKean, Pa. 16426

Filed Feb. 22, 1985, Ser. No. 704,448
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—550 **15 Claims**



1. A dynamic vibration attenuating device suitable for use as an engine mount or the like, comprising:

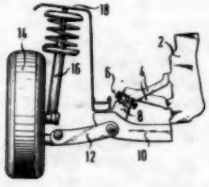
a housing formed in part of spring-like elastomeric material, said housing having a variable volume working chamber containing hydraulic fluid, said chamber having a wall including resilient fluid oscillator means for during excitation of said device imparting oscillatory movement to a slug of said hydraulic fluid, said oscillatory movement of said fluid slug generating inertial forces effecting a reduction of the dynamic stiffness of said device at high frequency excitation thereof, tuning means disposed within said chamber in non-engaging spaced relationship to said oscillator means and cooperable therewith for causing said stiffness reduction of said mount to occur at a selected excitation frequency of said device, said tuning means including a tuning assembly having at least one opening through which said fluid slug projects, and adjustable means for adjustably varying the size of said opening.

4,641,809

MOTOR VEHICLE ENGINE MOUNTING ARRANGEMENT

Wilhelm Beer, Russelsheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 28, 1985, Ser. No. 792,191
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—559 **3 Claims**



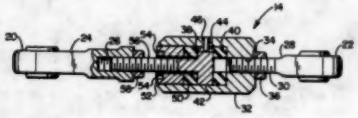
1. A mounting arrangement for mounting an engine on a chassis of a motor vehicle comprising two rigid outer parts connected respectively to the engine and chassis, two parts of elastomeric material connected respectively to the rigid outer parts, a core of rigid material disposed between the elastomeric parts having a moment of inertia so as to vibrate at substantially the frequency of the engine but in a direction substantially counter to the engine vibration, and said core being shaped relative to the rigid outer parts so that in one of the directions of vibration thereof said core moves in a direction out from between said rigid outer parts to effect a decrease in the distance thereof from the rigid outer parts thereby effecting an increase in the spring rate of the mounting arrangement.

4,641,810

ADJUSTABLE VIBRATION DAMPENING MOTOR MOUNT FOR MOTORCYCLES

Vernon D. Ott, Plaza Lanes, 1340 Mt. Vernon Ave., Marion, Ohio 43302

Filed Nov. 20, 1984, Ser. No. 673,426
Int. Cl.[4] F16M *13/02*
U.S. Cl. 248—635 **6 Claims**



1. An adjustable vibration dampening motor mount for use on a motorcycle including two ends, means on one end attached to a peg fixed to a motorcycle motor and means on the other end attached to a second peg fixed to a motorcycle frame, means intermediate the ends for adjusting the length of the mount and the angular orientation of the ends,

one of said ends having an externally threaded extension and the other having an internally threaded extension,

the adjusting means including a socket being internally threaded at one end, the externally threaded extension on said one end being in threaded engagement with said internally threaded end of the socket,

means for locking the socket and the externally threaded extension against relative rotation with a particular angular relationship,

the end of the socket remote from said threaded engagement including means forming a cavity having an inner end, means forming a first elastomeric abutment in engagement with said inner end, said elastomeric abutment being free to move both longitudinally and rotationally with respect to said socket,

a piston mounted in said cavity adjacent said abutment wherein said abutment is free to move rotationally with respect to said piston, said piston having a periphery conforming in shape to the shape of the cavity to allow lineal reciprocation of said piston within said cavity and with respect to said elastomeric abutment,

a piston rod attached to said piston and extending from said cavity into threaded engagement with the internally threaded extension,

means for locking the rod and extension against relative rotation with a particular angular relationship,

means for retaining the piston within the cavity,

a second elastomeric abutment within said cavity, said second elastomeric abutment being on the opposite side of the piston from said first elastomeric abutment, said second elastomeric abutment being free to move both longitudinally and rotationally with respect to the socket and this piston,

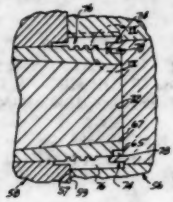
means for preventing relative rotation while allowing relative longitudinal movement between said piston and said socket.

4,641,811

ELECTRICAL CONNECTOR HAVING A MOLDED ANTI-DECOUPLING MECHANISM

David O. Gallusser, Oneonta, and David L. Frear, Bainbridge, both of N.Y., assignors to Allied Corp., Morristown, N.J.

Division of Ser. No. 637,184, Aug. 2, 1984, Pat. No. 4,548,458.
This application May 23, 1986, Ser. No. 866,858
Int. Cl.[4] B29C 39/34
U.S. Cl. 249—122 3 Claims



1. An apparatus for molding an electrical connector coupling nut of the type comprising a radially deflectable finger integrally molded thereto, the apparatus comprising:

a pair of cylindrical mold cores, each said core having a central axis and a respective front face thereof adapted to be brought into abutting relation, one said mold core comprising a cylindrical body having a relief groove adjacent to its front face, and the other said mold core including an arcuate blade that extends longitudinally from its front face to circumpose the relief groove whereby to define a first annular cavity, and

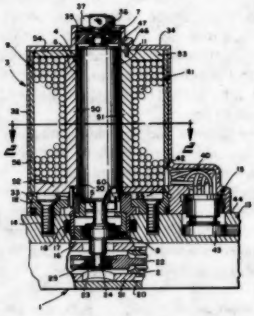
means including a pair of mold plates for receiving said pair of mold cores, said receiving means comprising each said mold plate including a stepped cylindrical passage, the inner and outer diameter of each passage step being, respectively, substantially equal to and greater than the outer diameter of the one said mold core and the other said mold core whereby to clearance fit the mold cores therewithin and define a second annular cavity, the first annular cavity forming the spring finger and the second annular cavity forming the coupling nut.

4,641,812

DIRECT DRIVE VALVE AND FORCE MOTOR ASSEMBLY INCLUDING INTERCHANGEABLE STATOR ASSEMBLY AND ALIGNMENT SYSTEM OR METHOD

Robert D. Vanderlaan, and Stanley D. Heeres, both of Kalamazoo, Mich., assignors to Pneumo Corporation, Boston, Mass.

Filed May 23, 1985, Ser. No. 737,251
Int. Cl.[4] F16K 31/08; H01F 7/08; H02K 33/00
U.S. Cl. 251—65 20 Claims



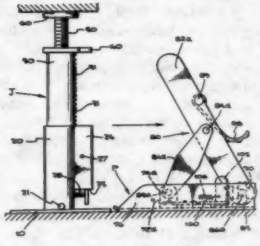
1. A limited angle torque motor comprising a rotor casing, a rotor assembly mounted for rotation within said rotor casing, means for clamping said rotor casing to a support surface while permitting limited rotational adjustment of said rotor casing relative to said support surface, and an interchangeable motor stator assembly adapted to be slidably received over one end of said rotor casing and clamped thereto, said motor stator assembly and rotor casing including a pin-slot connection therebetween for aligning said motor stator assembly to said rotor casing, an outer housing surrounding said motor stator assembly, electrical connector means for said stator assembly on the exterior of said outer housing, means for providing limited rotation of said outer housing relative to said motor stator assembly to permit said electrical connector means to be rotated into alignment with a receptacle in such support surface for plugging into said receptacle, and means for removably clamping said outer housing and motor stator assembly to said rotor assembly.

4,641,813

DUAL AUTOMOBILE JACK FOR CONSUMER USE

Harry H. Arzouman, Los Angeles, Calif., assignor to Safe-T-Jack, Irvine, Calif.

Division of Ser. No. 711,380, Mar. 13, 1985, Pat. No. 4,589,630.
This application Apr. 3, 1986, Ser. No. 847,507
Int. Cl.[4] B66F 5/04
U.S. Cl. 254—8 B 3 Claims



1. An easily transportable power unit adapted to be used in conjunction with an extendible jack stand having top and bottom plates supported on upper and lower telescoping vertical frames, for selective attachment to the jack stand and when thus attached to selectively raise or lower the jack stand, said power unit comprising, in combination:

a flat bottom plate;

a scissors assembly having the lower arms of one end thereof pivotally secured to said bottom plate and the lower arms of the other end slidable on said bottom plate;

drive screw means co-acting between said bottom plate and said slidable arms of said scissors assembly for raising the upper arms of said one end thereof;

said bottom plate being bifurcated at said one end of said scissors assembly so that both said lower and said upper arms of said scissors assembly may straddle the telescoping frames of the extendible jack stand;

means for releasably securing said power unit in aligned engagement with the extendible jack stand;

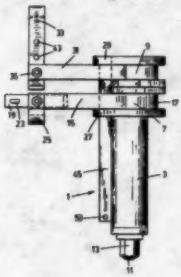
trip means supported from said bottom plate and selectively operable for actuating a ratchet release on the jack stand; and

means for manually controlling both said drive screw means and said trip means.

4,641,814
ON-VEHICLE SPRING COMPRESSOR TOOL

Sharookh Lala, Centerville, Ohio; Patrick Lehnerer, Wheaton, Ill.; Russell Hanson, Cary, Ill., and Michael Stevens, Lisle, Ill., assignors to Maremont Corporation, Carol Stream, Ill.

Filed Sep. 12, 1984, Ser. No. 650,762
Int. Cl.[4] B60P 1/00
U.S. Cl. 254—10.5 2 Claims



1. In a spring compressor tool for compressing a motor vehicle spring while said spring is operatively mounted on said vehicle in combination with a lower spring seat and a strut, said spring having a plurality of coils having a spring coil distance between adjacent spring coils when said spring is in its operatively mounted state, said tool having an upper spring coil engagement means and a lower spring engagement means, said lower spring engagement means being attached to a fixed vertical cylinder, said upper spring coil engagement means being attached to a movable vertical cylinder, said movable cylinder being in a vertical, telescoping relationship with said fixed cylinder such that application of a vertical force to said movable cylinder vertically moves said upper spring coil engagement means relative to said lower spring engagement means thereby compressing or relaxing said spring, said upper spring coil engagement means including a pair of laterally extending arms, each of said arms having vertically extending hook means attached thereto for engaging at least one spring coil, said lower spring engagement means including a pair of laterally extending arms, the improvement comprising in combination therewith

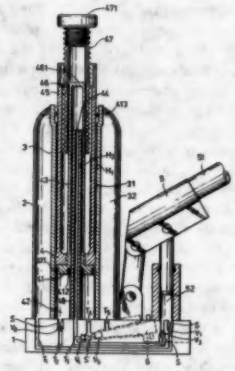
at least one of said hook means being elongated such that said elongated hook means is capable of vertically extending from said laterally extending arm to which said elongated hook means is attached by at least three spring coil distances and said lower spring engagement means additionally comprising a horseshoe bracket pivotally mounted on said laterally extending arms for engaging the undersurface of said lower spring seat.

4,641,815
HYDRAULIC JACK

Li K. Yu, Sanchung City, Taiwan, assignor to Fu-Chi Metalic Engineering Co. Ltd., Taipei Hsien, Taiwan

Filed Jun. 12, 1986, Ser. No. 873,345
Int. Cl.[4] B66F 3/24
U.S. Cl. 254—93 H 2 Claims

1. A hydraulic jack comprising a base; a housing fixed on said base; a low pressure cylinder mounted upright securely in said housing defining a first working chamber; a ram cylinder slidably mounted in said first working camber, said ram cylinder having a piston at a lower end thereof to define a low pressure working chamber with said first working chamber, and an axial central bore defining a second high pressure working chamber; an upright tube fixed on said base and extending into said bore, said tube being communicated with said high pressure working chamber; and improvements wherein said ram cylinder includes an outer hollow cylinder and an inner hollow cylinder fixed coaxially in said outer hollow cylinder, said inner hollow cylinder defining said second high pressure working chamber and receiving said tube, said inner cylinder being greater slightly in diameter than said tube, and having a top flat closed end, said second high pressure chamber being

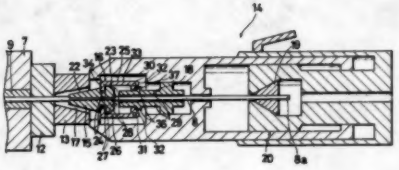


shut off sealingly by said piston and said upright tube from said low pressure chamber, and said base having a passage means communicating said tube and said low pressure chamber, and a one-way valve in said passage, whereby said low pressure chamber and said high pressure chamber are interconnected through said passage when a load is encountered.

4,641,816
APPARATUS FOR STRETCHING, LOOSENING, AND FIXING A WIRE MEMBER

Hiroo Kishida, and Hirofumi Takenaka, both of Osaka, Japan, assignors to Harumoto Iron Works Co., Ltd., Osaka, Japan

Filed Jun. 12, 1985, Ser. No. 743,962
Claims priority, application Japan, Oct. 6, 1984, 59-210152
Int. Cl.[4] B21F 9/02; F16G 11/04
U.S. Cl. 254—228 3 Claims



1. An apparatus for imparting tension to, loosening the tension in and fixing the position of an anchored wire member, said apparatus comprising:

a fixing member having therein a recess defining a conical wedge receiving face and through which an anchored wire member is to extend;

a wedge member having an outer wedge face tapering toward said wedge receiving face, said wedge member being divided circumferentially into a plurality of parts, said wedge member surrounding and gripping the wire member and fitting into said recess with said wedge face abutting said wedge receiving face, thereby fixing the position of the wire member;

a main body to be abutted with said fixing member with the wire member extending into said main body;

means, mounted within said main body, for grasping a free end of the wire member;

means for displacing said grasping means with respect to

said main body in a direction away from said fixing member, and thereby for tensioning the wire member grasped by said grasping means and thus for causing the wire member gripped by said wedge member to withdraw said wedge member from said recess in said fixing member;

means for holding said wedge member in the thus withdrawn position thereof, said holding means comprising at least one holding member having first and second portions and pivotally mounted on said main body for pivoting movement about a pivot between a first position, whereat said first portion engages said wedge member to maintain said wedge member in said withdrawn position thereof, and a second position, whereat said first portion is out of engagement with said wedge member; and

pushing means, mounted on said main body for movement relative thereto, for abutting said second portion of said holding member to pivot said holding member from said first position thereof to said second position thereof, thus releasing said wedge member, and then for abutting and pushing the thus released said wedge member with respect to the wire member toward said fixing member until said wedge member enters said recess with said wedge face abutting said wedge receiving face and with said wedge member again gripping the wire member, thereby fixing the position of the tensioned wire member.

4,641,817

VIBRATION ABSORBING MOUNTINGS

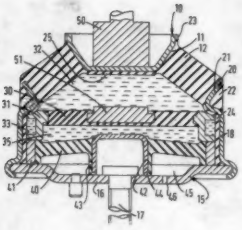
Michael Clark, Coventry, and Kenneth J. Taylor, Nuneaton, both of England, assignors to Dunlop Limited, England

Filed Mar. 19, 1984, Ser. No. 590,953

Claims priority, application United Kingdom, Apr. 5, 1983, 8309124; Jul. 2, 1983, 8318040

Int. Cl.⁴ F16M *5/00*

U.S. Cl. 267—140.1 **11 Claims**



1. A vibration absorbing mounting comprising a first end member and a second end member, a rubber spring member bonded respectively to each of the end members, a rubber intermediate diaphragm secured to the second end member and defining with the rubber spring member a first liquid-filled chamber, and an annular rubber second diaphragm member secured at its periphery to the second end member and to a central support provided on the second end member and defining a second liquid-filled chamber between the second diaphragm and the intermediate diaphragm, the intermediate diaphragm being bonded to a support ring fitted within the second end member, the outer periphery of said support ring being shaped so as to define an annular space between the ring and the inner surface of the second end member, said annular space communicating respectively with said first and second chambers in circumferentially spaced positions so as to provide a long restricted passageway through which fluid may flow from one chamber to the other to provide a damping action.

4,641,818

APPARATUS FOR ADJUSTING TWO BUTT-ENDS OF RAILS TO BE CONNECTED BY WELDING

Patrick T. Bommart, Rueil-Malmaison, France, assignor to C. Delachaux, Gennevilliers, France

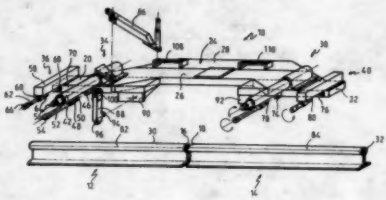
Filed Jul. 20, 1981, Ser. No. 285,349

Claims priority, application France, Jul. 30, 1980, 80 16805

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.⁴ B25B *1/20*

U.S. Cl. 269—43 **6 Claims**



1. Apparatus for adjusting two butt-ends of rails to be connected by welding, comprising a concave rigid structure including two support plates which are aligned and connected to each other and a connecting element which connects the support plates together, the concave rigid structure being able to be arranged horizontally so that the two support plates can be placed one on a vertical side of the head of one of the rails and the other on the corresponding vertical side of the head of the other rails, whereby the concave rigid structure defines an area for access around the ends, the apparatus further comprising two spaced supports for each support plate, a first retaining press for each support plate provided with a movable jaw capable of bearing on the opposite vertical side of the heads of the rail than the respective plates, and a second retaining press for each support plate whereby the two retaining presses of each support plate are respectively associated with the two supports which respectively constitute the fixed jaws of the first and second retaining presses.

4,641,819

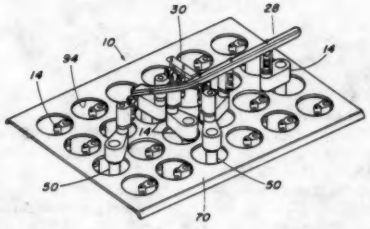
FLEXIBLE ASSEMBLY JIG

David A. Poland, Hawthorne, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Mar. 12, 1984, Ser. No. 588,839

Int. Cl.⁴ B23P *17/00*

U.S. Cl. 269—45 **16 Claims**



1. A flexible assembly jig for positioning a workpiece multidimensional, the jig comprising a plurality of positioner units;

locator means on each said unit for engaging a workpiece for multidimensional location;

each locator means being actuatable in three-dimensions into unrestricted operative positions, including positions in horizontal fields overlapping the horizontal fields of oper-

ative position of locator means of adjacent positioner units;

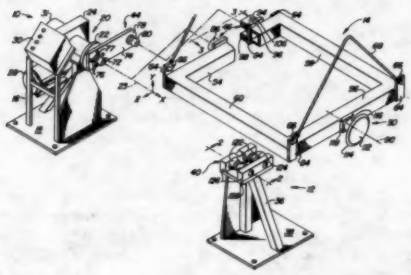
each said positioner unit including locator means gross adjustment means, and locator means fine adjustment means, the gross adjustment means including a rotationally and vertically adjustable eccentric means supporting an arm for movement about an axis defined by positioning of the eccentric means, and the fine adjustment means including a rotationally and vertically adjustable locator carrier means arranged proximate an end of said arm remote from the axis positioned by said eccentric means and positionable to support said locator means in an operating field beyond the maximum elevation field to which the gross and fine adjustment means are vertically adjustable said locator carrier means further supporting a second locator means fine adjustment means for final elevation of said locator means.

4,641,820

WELD FIXTURE MOUNTING

Raymond D. Gold, Waukee, and Leo W. Riegel, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 7, 1985, Ser. No. 742,243
Int. Cl.[4] B23Q *3/18*
U.S. Cl. 269—58 **14 Claims**



1. For a positioning device including a headstock positioner rotatable about an axis, a tailstock positioner, and a fixture for supporting a workpiece, the fixture having a headstock end and a tailstock end, a fixture mounting arrangement comprising:

a slidably engageable connector portion;

means for connecting the connector portion to the headstock end of the fixture;

a first locating device;

means for connecting the first locating device to the headstock positioner for rotation about the rotational axis;

a tapered roller;

means for connecting the tapered roller to the tailstock end of the fixture;

a support including a roller-receiving groove;

means for attaching the support to the tailstock positioner and;

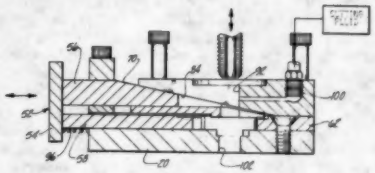
wherein said connector portion is slidably engageable with the first locating device to center the headstock end with respect to the headstock positioner and said roller is positionable within the groove to center the tailstock end of fixture, and wherein said groove extends perpendicular to the axis of the roller to thereby also position the fixture in a direction generally along the axis of the roller.

4,641,821

WORKPIECE HOLDER

Henry J. Jaworski, 6374 Mettetal, Detroit, Mich. 48228

Filed Mar. 27, 1985, Ser. No. 716,490
Int. Cl.[4] B25B *1/08*
U.S. Cl. 269—234 **11 Claims**



1. A workpiece holder for fixedly retaining a workpiece comprising:

a base having a groove defining a workpiece pathway, a portion of said groove defining a workpiece station, said workpiece station having a bottom surface and at least one side surface;

a locking plate movably mounted to said base, said locking plate disposed above said workpiece station;

means for mounting said locking plate to said base biasing said locking plate in a direction away from said base;

an upper plate mounted to said base, said upper plate having a portion positioned a predetermined space apart distance above said locking plate;

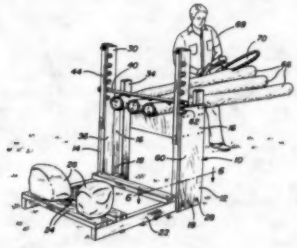
a pushbar slidably mounted to said base, said pushbar mounted to slide between a predetermined retracted position and a predetermined locked position; said pushbar having a wedge portion integral with and spaced apart from a locking arm said locking arm having an end portion positioned to direct said workpiece into abutment with said side surface of said workpiece station to hold said workpiece at the workpiece station when said pushbar is in the locked position, said wedge portion interposed said upper plate and said locking plate, said wedge portion directing said locking plate against said workpiece to hold said workpiece between said bottom surface of said workpiece station and said locking plate when said pushbar is in the locked position; whereby the workpiece is held in both a vertical direction and a horizontal direction by a single movement of the push bar into said locked position.

4,641,822

WOOD HOLDER

Stanley W. Fenerty, 19 Polly Ann Ct., Dover, N.H. 03820

Filed Apr. 19, 1985, Ser. No. 725,298
Int. Cl.[4] B23Q *3/00*
U.S. Cl. 269—296 **4 Claims**



1. A wood holder for cantilever support of one or more

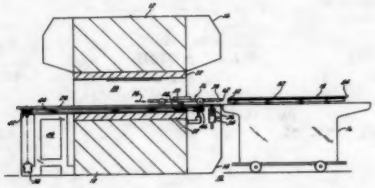
elongated logs or lumber pieces in elevated horizontal position while having successive end sections cut therefrom through utilization of handheld power saw, said holder including a pair of opposite side uprights, a first horizontally elongated fulcrum rest extending between and mounted from upper portions of said uprights against downward displacement relative thereto, a horizontally elongated abutment member extending between and mounted from said upper portions of said uprights at an elevation spaced above said fulcrum rest, against upward displacement relative to said uprights and with said abutment member disposed in a first vertical plane laterally spaced from a second vertical plane containing said fulcrum rest, elongated horizontal base means interconnecting the lower end portions of said uprights, said base means projecting lengthwise considerably horizontally laterally outwardly of the first said plane in a direction away from said second plane and including an outer end portion, means anchored relative to said outer end portion for strongly resisting upward displacement of the outer end portion of said base means relative to a surface upon which said base means rests, said uprights and abutment member including means for mounting said abutment member from said uprights for vertical adjustment therealong, said abutment and fulcrum rest including downward and upward facing abutment surface portions, respectively, for abutting the upper and lower surface portions of first short end portions of elongated lumber pieces having second longer end portions thereof projecting outwardly of said second plane away from said first plane, said base means being free of portions thereof projecting appreciably outwardly of said second plane away from said first plane, said means for mounting said abutment member for vertical adjustment along said uprights including horizontally registered pairs of notches formed in said upright and opening horizontally outwardly thereof away from the side of said first plane remote from said second plane and in which the opposite ends of said abutment member are removably receivable, and elongated heavy duty tensioned elastic members secured along the sides of said uprights through which said notches open and removably closing the open ends of said notches.

4,641,823

CRADLE DRIVE AND RELEASE MECHANISM FOR USE WITH A MAGNETIC RESONANCE SCANNER

Charles T. Bergman, Watertown, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 18, 1984, Ser. No. 683,081
Int. Cl.[4] A61G *13/00*
U.S. Cl. 269—322 **13 Claims**



1. A cradle drive apparatus for releasably engaging and for retrievably positioning a patient cradle in an advanced position on a bridge within the bore of an MR scanner and for returning the patient cradle to a home position on a patient transport table, said cradle drive apparatus comprising:

a cradle drive dolly disposed on said bridge for longitudinal movement thereon;

a clutch disc mounted on said drive dolly;

a clutch pad and bias means for enabling said clutch pad to frictionally engage said clutch disc, said clutch disc fixedly secured to a drive sprocket means;

drive belt means for engaging said drive sprocket means; and

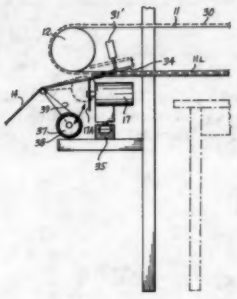
bidirectional motor operably coupled to said drive sprocket means to drive said cradle dolly on said bridge in a first direction when said clutch pad frictionally engages said clutch disc and when said motor means is energized to rotate in one direction, and to drive said cradle dolly in a second direction, opposite to said first direction, when said motor means is energized to rotate in the opposite direction.

4,641,824

CLOTH SPREADING APPARATUS WITH CUTTER

Matti Wallgren, Kangasvuokontie 7 A 8, 57220 Savonlinna 22, and Pertti Tynkkynen, Peltorinne 7, 57230 Savonlinna 23, both of Finland

Continuation-in-part of Ser. No. 659,242, Oct. 10, 1984, abandoned. This application Nov. 25, 1985, Ser. No. 801,676
Claims priority, application Finland, Oct. 18, 1983, 833790; Sep. 28, 1984, 843817
Int. Cl.[4] B65H *29/46*
U.S. Cl. 270—31 **20 Claims**



1. Apparatus for spreading, cutting, and stacking cloth, said apparatus comprising a table; an endless belt-type conveyor positioned above the table on each side thereof and having a lower run arranged to always proceed in the same longitudinal direction from an infeed end of the table to an outfeed end thereof; cutting means for severing the cloth along a laterally extending line adjacent to said infeed end; a plurality of longitudinally spaced cloth engaging devices carried by each such conveyor for engaging the corresponding longitudinal edge of the cloth; attaching means for automatically attaching the cloth to said engaging devices to cause the cloth to be conveyed along the table by said lower run, said attaching means being positioned before the cutting means along said longitudinal direction to ensure continued automatic conveying of the cloth along said direction following severing of the cloth; and release means for automatically releasing a length of cloth from the engaging devices following severing of the cloth to allow said length of cloth to drop onto the table.

4,641,825

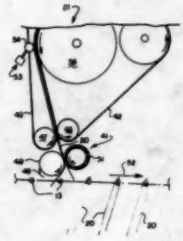
COLLATOR WITH MOVEABLE STITCHER OVER SADDLE CONVEYOR SYSTEM

Harry E. Mowry, Plattsburg, and Richard B. Hawkes, Peru, both of N.Y., assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed May 22, 1985, Ser. No. 736,850
Int. Cl.[4] B42B *1/02*
U.S. Cl. 270—53 **20 Claims**

1. A collator comprising a closed loop endless conveyor including a plurality of signature supporting means extending perpendicular to the conveying direction, a plurality of signature feed means adjacent said conveyor operable to progressively locate folded signatures in position supported by said signature supporting means to produce assemblies of signatures in which the folds thereof extend perpendicular to the convey-

ing direction, stitching means adjacent to said conveyor operable to stitch together assembled signatures delivered thereto by said signature supporting means, and delivery means operable to remove stitched assemblies from said conveyor, said signature feed means including a sensor operable to detect when a misfeed occurs resulting in an incomplete assembly, said sensor



operating to disable downstream signature feed means as well as stitching means and delivery means as said incomplete assembly passes thereby, said conveyor operating to return said incomplete assembly to a feed means feeding the missing signature for subsequent completion, stitching, and removal from said conveyor.

4,641,826

MACHINE DESIGNED TO LIFT A FLEXIBLE, FLAT WORKPIECE OFF A SUPPORT SURFACE

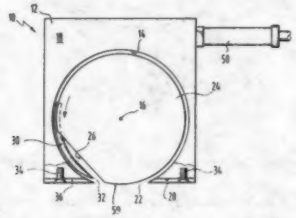
Egbert J. van der Weide, GW Olst, Netherlands, assignor to Beisler GmbH, Fed. Rep. of Germany

Filed Jun. 14, 1985, Ser. No. 745,296

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1984, 3422337

Int. Cl.[4] B65H *3/22*

U.S. Cl. 271—18.3 **12 Claims**



1. In a machine for lifting a flexible, flat workpiece, said machine including a housing with a slit therein and a needle for passing through the slit and piercing the workpiece, wherein the improvement comprises:

needle holder means for holding said needle, said holder being generally disc shaped having an axis and an outer circumference, the outer circumference including a circular portion and a sector cut out from the circular circumference portion of the holder, said needle being circular having one end mounted to the holder on the circumference thereof such that the needle bridges the main part of the sector with the point of the needle being spaced by a gap of a preselected distance from a leading edge portion of the circular circumference portion of the holder;

means for mounting the needle holder to the housing such that the leading edge of the holder protrudes through the slit when the holder is in a rest position so as to push down on the workpiece to prevent folds from occuring in the slit when the machine is first placed thereon; and

means for rotating said holder to cause the leading edge thereof to rotate out of contact with the workpiece and to cause the point of the needle to follow an arcuate path through the slit of sufficient length to pierce the workpiece whereby the machine can be raised to lift the workpiece and carry it to another location.

4,641,827

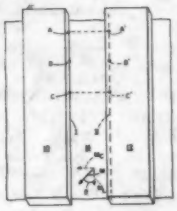
FABRIC PICKUP AND THE LIKE

Richard R. Walton, Ten West Hill Pl., Boston, Mass. 02114, and George E. Munchbach, Roslindale, Mass., assignors to Richard R. Walton, Boston, Mass.

Filed Jun. 2, 1983, Ser. No. 500,261

Int. Cl.[4] B65H *3/22*

U.S. Cl. 271—18.3 **17 Claims**



1. A fabric component pickup apparatus or the like comprising,

first and second fabric gripping elements defining first and second opposed gripping lines in the plane of the face of the fabric component,

and means for producing relative movement of said fabric gripping elements when in contact with the face of a said fabric component with motion to displace one of said gripping lines laterally in the plane of the fabric in the manner to produce tension in the fabric and with motion effective to close said fabric gripping elements together after said tension has been applied to said fabric to grip the fabric therebetween.

4,641,828

METHOD FOR FEEDING MATERIAL SHEET TO A PRESS

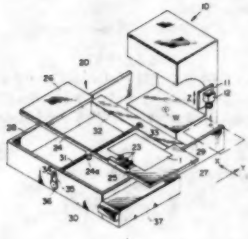
Toshio Yajima, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 535,677, Sep. 26, 1983, abandoned. This application Dec. 27, 1985, Ser. No. 815,652

Claims priority, application Japan, Sep. 28, 1982, 57-170612; Nov. 22, 1982, 57-204957; Feb. 21, 1983, 58-27417

Int. Cl.[4] B65H *7/14, 9/10, 9/20*

U.S. Cl. 271—227 **25 Claims**



1. A method for feeding material sheet to a press comprising the steps of:

transferring for predetermined travel distances a material sheet on which pairs, each consisting of a print part and a

positioning mark located near said print part, are printed so that at each of said predetermined travel distances the positioning mark of a respective one of said pairs enters the field of view of a view means, said view means being situated at a certain fixed position related to the punching position of said press;

detecting and storing, at each of said predetermined travel distances for the respective one of said pairs, a digital deviation value representative of the deviation of the center of said positioning mark from a reference position of said field of view in X axis and Y axis directions of said view means, so that when said material sheet has been transferred for all of said travel distances there will be stored a set of digital deviation values; and

sequentially positioning each of said print parts to said punching position of the press using the set of detected and stored deviation values as respective positioning correction values.

4,641,829

SCREEN PRINTING MACHINE HAVING A STATIONARY PRINTING TABLE

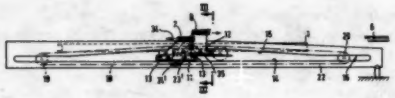
Karl Kölblin, Emmendingen, Fed. Rep. of Germany, assignor to Werner Thieme GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 29, 1985, Ser. No. 727,726

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 3415715

Int. Cl.⁴ B65H *5/10*

U.S. Cl. 271—268 **25 Claims**



1. A screen printing apparatus having transfer means for repeatedly transferring sheet material from a supply means to a printing table during a printing operation, said transfer means comprising:

first and second mobile gripper means for gripping said sheet material;

guideway means for guiding said first and second gripper means over said printing table;

said first gripper means being guided in a direction oppposite to said second gripper means, and said first gripper means being guided over said second gripper means at a center region of said guideway means; and

driving means for moving said gripper means, said driving means being capable of moving said first gripper means in a direction opposite said second gripper means, said driving means comprising endless conveyor means, said first and second gripper means being connected to said conveyor means at a separation equal to one-half the length of said conveyor means.

4,641,830

PRINTER PAPER FEEDING APPARATUS

Kazuhiro Okuda; Makoto Tanaka, and Wataru Kuramitsu, all of Chofu, Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1985, Ser. No. 797,948

Claims priority, application Japan, Nov. 15, 1984, 59-173602[U]

Int. Cl.⁴ B65H *5/06*

U.S. Cl. 271—274 **2 Claims**

1. A paper feeding apparatus for a printer comprising:

(a) a machine frame;

(b) a platen rotatably supported by said machine frame;

(c) a lever rotatably supported by said machine frame;

(d) a paper bail roller adapted to contact said platen;

(e) a paper bail arm, one end of said paper bail arm rotatably supported by said machine frame and the other end rotatably supporting said paper bail roller;

(f) a presser roller adapted to contact said platen;

(g) a presser arm, one end of said presser arm rotatably supported by said machine frame and the other end rotatably supporting said presser roller;

(h) a first cam fixedly attached to the center portion of said lever and adapted to release said paper bail roller from contact with said platen on manipulation of said lever; and

(i) a second cam fixedly attached to the center portion of said lever and adapted to release said presser roller from contact with said platen on manipulation of said lever.

4,641,831

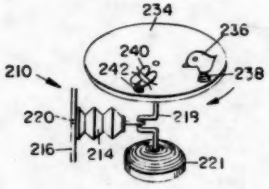
ROTATING AMUSEMENT DEVICE HAVING MOTION GOVERNOR

David C. Hughes, South Hadley, Mass., assignor to Milton Bradley Company, East Longmeadow, Mass.

Continuation-in-part of Ser. No. 525,140, Aug. 22, 1983, abandoned. This application Sep. 13, 1985, Ser. No. 775,631

Int. Cl.⁴ A63H *13/20*

U.S. Cl. 272—31 R **2 Claims**



1. Apparatus for controlling intermittent rotary motion comprising:

a support, a bellows having one end fixed to the support and an opposite free end, the bellows having a longitudinal center line,

a restricted vent opening communicating with the bellows,

a stallable type motor,

a crank operatively connected at one end to the free end of the bellows and at its opposite end to the motor,

a turntable operatively connected to the crank,

the crank being driven by the motor and describing with the free end of the bellows a circular path about a center on a line perpendicular to the center line of the bellows,

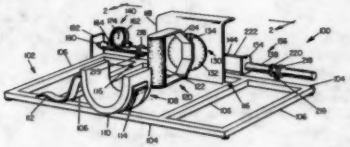
actuation of the crank by the motor effecting slow movement of the crank through certain segments of the circular path and concomitant slow rotative movement of the turntable as air slowly enters into and exits from the bellows through the restricted vent opening as the length of the bellows is alternately lengthened and shortened,

further actuation of the crank by the motor effecting rapid movement of the crank through certain other segments of the circular path and concomitant rapid rotative movement of the turntable as the length of the bellows remains substantially constant.

4,641,832
WRIST/ANKLE EXERCISING APPARATUS

Ernest M. Mattox, Belmont, Mich., assignor to Portable Isokinetics, Inc., Grand Rapids, Mich.

Filed Apr. 24, 1984, Ser. No. 603,409
Int. Cl.[4] A63B *5/00*
U.S. Cl. 272—67 **13 Claims**



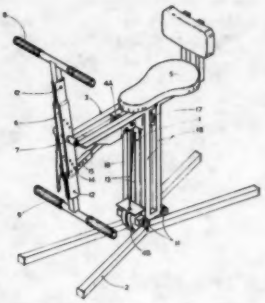
1. A wrist/ankle exercise apparatus comprising:
a portable structural frame providing a fixed base support while the exercise apparatus is in use;
a stationary elongated member connected to said frame;
an elongated tube axially movable with respect to said elongated member, wherein said elongated member is at least partially received within said tube;
a slide member slidably mounted on said elongated tube;
means for providing frictional resistance to movement of said slide member along said elongated tube by a user during exercise;
a slide-actuating member rotatably mounted to said frame and coupled to said slide member to translate rotational movement of said slide-actuating member to linear motion of said slide member on said elongated tube;
force measuring means mounted to said elongated tube for visually indicating to said user the relative magnitude of force applied between said slide member and said elongated tube;
whereby said user may move said slide member along said elongated tube by rotation of said slide-actuating member; and
said force-measuring means comprises means for coupling said elongated member to said elongated tube so that the displacement of said tube relative to said stationary member is proportional to the relative magnitude of force applied between said slide member and said tube.

4,641,833
EXERCISE MACHINE

Reginald Trethewey, Deepwater, Australia, assignor to Comdox No. Pty. Ltd., Deepwater, Australia

PCT No. PCT/AU83/00094, § 371 Date Mar. 15, 1984, § 102(e) Date Mar. 15, 1984, PCT Pub. No. WO84/00496, PCT Pub. Date Feb. 16, 1984
PCT Filed Jul. 20, 1983, Ser. No. 594,521
Claims priority, application Australia, Jul. 21, 1982, PF4968; Mar. 14, 1983, PF8416; May 17, 1983, PF9390
Int. Cl.[4] A63B *69/06, 21/00, 21/22*
U.S. Cl. 272—72 **12 Claims**

1. An exercise machine comprising:
a base supporting a movable frame having a seat thereon;
an exercise bar with handles and pedals supported on said frame;
a linkage system connecting said bar to said frame such that rotation of said bar causes elevation of said frame;
a column mounted on said base, runners operatively associated with said column and connected with said frame, said runners being movable towards and away from said base;
a pair of spaced pulleys rotatably coupled to said runners; and
a cable having one end operatively anchored to said column and another end pivotally operatively anchored to said

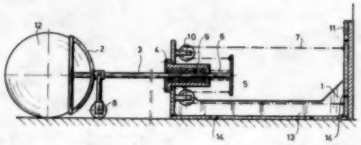


exercise bar and running on said pulleys for moving said runners to raise said seat.

4,641,834
TRAINING APPARATUS FOR KICKING A FOOTBALL

László Hegedüs, Tátra tre,acu/e/ r A/2, 1025 Budapest, and Zoltán Horváth, Váci ut 79, 1056 Budapest, both of Hungary

Filed Apr. 9, 1985, Ser. No. 721,520
Claims priority, application Hungary, Apr. 27, 1984, 1649/84
Int. Cl.[4] A63B *69/00, 67/00*
U.S. Cl. 272—76 **5 Claims**



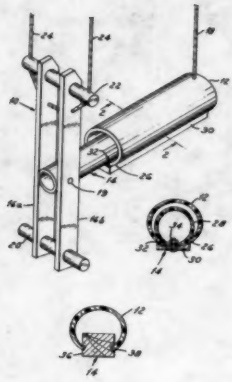
1. Apparatus for the development of leg muscles and intensification of the kicking force, comprising a basket for holding a ball therein, an axially movable horizontal bar attached at one end to said basket and to a horizontally movable support adjacent to said basket, a carrier plate attached to the other end of said horizontal bar, a ball sleeve in a bearing box, the horizontal bar being movably positioned through said bearing box, support means for fixing said bearing box, and at least two prestressed elastic elements each having two ends, said elements being attached to said carrier plate at one end of each element, and the other end of each element being attached to a first fixed support, a pulley associated with each element, a second fixed support for each pulley, each pulley being attached to said second fixed support, whereby, when a kicking force is applied to a ball in said basket, said basket and attached horizontal bar are displaced horizontally causing said prestressed elastic elements to stretch then return to their original position moving the basket and horizontal bar to their respective original positions.

4,641,835

CUSHION FOR A SWING OR THE LIKE AND METHOD FOR MAKING SAME

Robert J. Christenson, Flushing, Mich., assignor to GMI Engineering & Management Institute, Flint, Mich.

Filed Mar. 1, 1985, Ser. No. 707,722
Int. Cl.[4] A63G *9/12*
U.S. Cl. 272—87 **16 Claims**



1. An elastic cushion comprising:

a cylindrical resilient cushion tube having a peripheral wall, with an axial slit extending the length thereof, creating a pair of slit edges in said wall; and

groove means for supporting said cushion tube, said groove means being spaced apart axial grooves for receiving said edges of said slit and holding said edges of said slit a spaced distance apart with the orientation of said grooves corresponding to the natural angle of the tube wall forming the slit and edge so as to elastically expand said tube cross section into a "C" shape;

wherein, said cushion tube is loaded on a portion of the peripheral wall oppositely disposed from said slit, the cushion tube wall being elastically deformable to provide a resilient cushion.

4,641,836

WEIGHT LIFTING APPARATUS FOR EXERCISING THE TRICEPS

Orville J. Clifton, Box 463, Inola, Okla. 74036

Filed Jun. 28, 1985, Ser. No. 749,650
Int. Cl.[4] A63B *11/00*
U.S. Cl. 272—122 **6 Claims**

1. A free weight, tricep exercise apparatus comprising:

(a) a handle means adapted, during use of said tricep exercise apparatus, to be manually held overhead and behind the user's back while the user performs a tricep curl movement;

(b) a rigid, arched support means operatively attached at one end to said handle means and adapted, during use of said tricep exercise apparatus, to extend generally downward behind the user's back; and

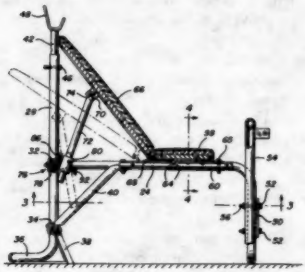
(c) a post means operatively attached near the other end of said rigid, arched support means, essentially perpendicular to said rigid, arched support means and directed substantially towards the center of the radius of curvature of said rigid, arched support means, said post means including a free end for receiving and retaining weights and an attached end being spaced from the other end of said rigid, arched support means so as to allow a weight to rest adjacent said rigid, arched support means.

4,641,837

WEIGHT LIFTING BENCH WITH ADJUSTABLE BENCH SECTIONS

Bruce M. Ruth, R.D. 6, Box 230, Reading, Pa. 19608

Filed Jun. 7, 1985, Ser. No. 742,694
Int. Cl.[4] A63B *13/00*
U.S. Cl. 272—123 **5 Claims**



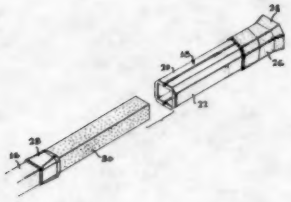
1. A weight lifting bench including an elongated horizontal frame having front and rear ends, an elongated backrest portion including base and free ends, a seat portion mounted from said frame for guided adjustable shifting along the front end thereof and including front and rear marginal portions, means operative to releasably lock said seat portion in adjusted shifted positions along said frame, means pivotally mounting said base end from said rear marginal portion for angular displacement of said backrest portion relative to said frame about a first horizontal transverse axis with the free end of said backrest portion swingable between a raised position spaced appreciably above said rear end of said frame and a lowered position closely overlying the rear end of said frame, anchor structure, means pivotally mounting said anchor structure from said rear end of said frame for rotation about a second horizontal transverse axis and including a portion thereof defining an elongated upstanding guide passage extending therethrough and spaced at least slightly longitudinally of said frame relative to the last mentioned axis, an upstanding prop, the upper end of said prop being pivotally mounted from said free end of said backrest portion for angular displacement relative thereto about a third horizontal transverse axis, the lower end of said prop being guidably received through said passage, said anchor structure portion including manually releasable cam lock means operative to releasably frictionally grip said prop with a one-way movement preventing engagement therewith to prevent downward movement of said prop relative to said anchor structure portion and allow reasonably free upward movement of said prop relative thereto, the rear end of said frame including a pair of upstanding and upwardly projecting opposite side standards supported therefrom whose upper ends include means defining upwardly opening cradles to seatingly receive

the opposite end of a weight bar extending transversely of said frame therein, the pivotal connection of said backrest portion with said seat portion, the adjustability of said seat portion longitudinally of the front end of said frame and the adjustablility of said prop enabling a predetermined portion of said backrest portion, spaced therealong from said first axis and disposed in a vertical plane containing the shoulders of a user of said bench having his upper torso resting upon said backrest portion, to be disposed in substantially the same vertical plane as said cradles to thereby properly position the user's shoulders directly beneath a weight bar supported from said cradles.

4,641,838
TENNIS RACKET WITH RACKET HAVING ADJUSTABLE LENGTH HANDLE

Pericles Gabrielidis, 14141 Riverside Dr., #1, Sherman Oaks, Calif. 91423

Filed Nov. 26, 1984, Ser. No. 674,660
Int. Cl.[4] A63B *49/08*
U.S. Cl. 273—73 J **26 Claims**



23. A racket comprising:

an open frame for carrying strings thereacross, a shank secured to said open frame, said shank having an outer end away from said open frame, said outer end of said shank being straight and of uniform cross-section;

a handle mounted on said shank, said handle having a plurality of sections, said sections defining an opening therebetween sized and configured to receive said outer end of said shank so that said handle can be placed on said shank at any one of a plurality of selected positions on said shank to select the position of said handle with respect to said open frame;

connecting means connected to said handle sections for permitting said handle sections to be opened while said connecting means is connected to said handle sections so as to permit positioning of said handle on said shank and permit closing of said handle sections on said shank to clamp said handle sections on said shank at the selected position; and

a flexible grip grip wrapped around said handle to urge said sections toward said shank so that said handle grasps said shank to resist axial motion of said handle with respect to said shank so that the effective length of the racket can be selected and adjusted and retained.

4,641,839
ROLLER-BALL STRUCTURE

Arthur A. Turner, 8110 SW. 72nd Ave., B-5, Miami, Fla. 33143

Filed Aug. 9, 1985, Ser. No. 763,864
Int. Cl.[4] A63B *71/00, 43/02*
U.S. Cl. 273—128 A **12 Claims**

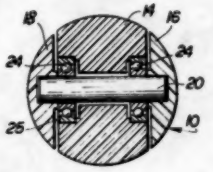
1. A roller-ball structure of the type designed to travel over a supporting surface, said structure comprising:

(a) a roller element rotatably mounted on a centrally disposed shaft having a longitudinal axis which defines an axis of rotation of said roller element,

(b) two ball segments each fixedly secured to said shaft on opposite sides of said roller element, said roller element movable relative to said two ball segments,

(c) said roller element and each of said ball segments respectively comprising an external surface having a semispherical configuration,

(d) said external surface of said roller element being rotatably movable relative to said external surfaces of said ball segments and said external surfaces of said roller element and ball segments collectively defining a substantially



continuous spherical configuration of said roller ball structure,

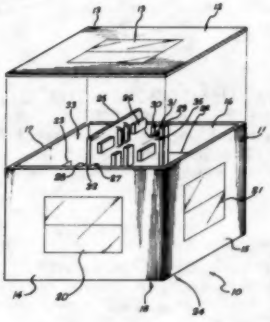
(e) a support engaging, rolling surface defined by said semispherical external surfaces of said roller element and said ball segments, and

(f) said external surfaces of said ball segments being spaced from said external surface of said roller element but closely adjacent thereto to allow concurrent engagement of said external surface of said roller element and said external surface of either of said ball segments.

4,641,840
ELECTRONIC PLAYING DIE

Kim A. Larson, P.O. Box 5051, Fullerton, Calif. 92635

Filed Sep. 16, 1985, Ser. No. 776,487
Int. Cl.[4] A63F *9/04*
U.S. Cl. 273—138 A **11 Claims**



6. An electronic playing die comprising:

an insulative multi-faceted housing having a number display on each facet thereof; and

circuit means for causing rapid blinking of said numeric displays during playing die motion and for causing a single number selected by chance which is independent of playing die position to be simultaneously displayed on all the number displays at each cessation of playing die motion.

4,641,841

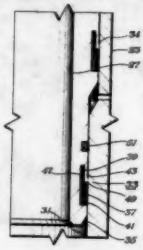
METAL SEAL FOR A TUBULAR CONNECTION

Albert M. Regan, Huntington Beach, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Aug. 26, 1985, Ser. No. 769,051

Int. Cl.[4] E21B *33/03*; F16J *15/00, 15/32*

U.S. Cl. 277—30 **2 Claims**



1. In a subsea well installation having first and second tubes, the first tube having a male end adapted to seat into a bore of the second tube, to establish fluid communication, an improved seal means on the male end of the first tube, comprising in combination:

an annular recess formed in the sidewall of the first tube, defining a support shoulder;

a cylindrical metal lip depending from the support shoulder, having an inner sidewall spaced from the sidewall of the first tube, the lip having a free end with an outer diameter that is slightly less than the inner diameter of the bore of the second tube; and

an annular band formed on the exterior of the free end of the lip, the band having an outer diameter that is greater than the inner diameter of the bore so as to form an interference fit with the bore, causing the lip to deflect elastically inward when inserted within the bore;

the recess being adapted to be exposed to pressure from fluid located in the bore so as to act against the inner sidewall of the lip to urge it outwardly to enhance sealing of the band against the bore; and

a second shoulder located on the first tube between the male end and the lip, defining one end of the recess, facing toward the support shoulder and spaced axially from the lip, the shoulder being substantially the same diameter as the lip and slightly less than the diameter of the bore.

4,641,842

SHAFT SEALING DEVICE WITH FLOATING SEAL MEMBER

Tadashi Kataoka, Kanagawa, Japan, assignor to Ebara Research Ltd. and Ebara Corporation, both of, Japan

Filed Mar. 26, 1986, Ser. No. 844,145

Claims priority, application Japan, Mar. 29, 1985, 60-47665[U]

Int. Cl.[4] F16J *15/26*

U.S. Cl. 277—83 **10 Claims**

1. A shaft sealing device, comprising

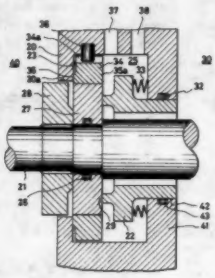
an outer casing having an inner surface,

a rotatable shaft situated within said casing and passing therethrough,

rotation ring means, having opposed sides and an outer circumferentially-extending surface, mounted on said shaft for rotation therewith,

a mechanical seal member situated within said casing and co-operating with one of said sides of said rotation ring means,

a floating seal member situated within said casing and fixed against rotation with said shaft, said floating seal member being mounted on said outer circumferential surface of said rotation ring means and forming a fluid-tight seal therewith, a side of said floating seal member contacting said inner surface of said casing,



wherein a sealing chamber for lubricant is formed within said casing by said rotation ring means, mechanical seal member, and floating seal member.

4,641,843

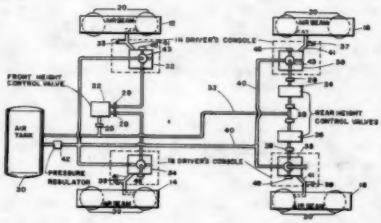
SYSTEM AND METHOD FOR LEVELING A CONVERTED MOTOR HOME

John J. Morrisroe, Jr., 20 Dowling Dr., Ridgefield, Conn. 06877

Filed Mar. 21, 1985, Ser. No. 714,279

Int. Cl.[4] B60G *11/26*

U.S. Cl. 280—6 R **5 Claims**



1. In a vehicle having an air suspension system comprising four air beams supporting the corners of the vehicle body over the vehicle axles by bellows supplied by air from an air tank under the control of three height control valves, one height control valve controlling both air beams at one end of the vehicle, the improvement of leveling apparatus which comprises:

a manually operable five-way leveling valve coupled between said air tank and each of said air beams; and

means for connecting each of said five-way leveling valves between one of said height control valves and one of said air beams whereby each of said four air beams is under the unique control of its associated five-way leveling valve.

4,641,844

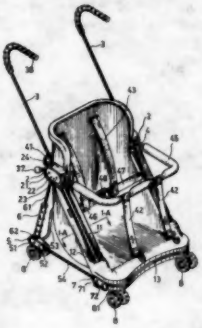
BABYLER FOLDING BABY STROLLER FOR MULTIPLE USES

Shih-Lin Mar, 3rd Fl., No. 10, Lane 134, Tzu-Li Str., Hsintien, Taipei Hsien, and Long-Cho Kuo, No. 20, Chung-Hsiao Rd., Ma-Dou Jenn, Tainan Hsien, both of Taiwan

Continuation of Ser. No. 558,054, Dec. 5, 1983, abandoned. This application Mar. 3, 1986, Ser. No. 835,427

Int. Cl.[4] B62B 7/12

U.S. Cl. 280—30 1 Claim



1. A folding baby stroller for multiple uses comprising:

a carrying chair which includes two flanged side members,

a front bottom edge formed into an arc-shaped member to adapt to back carrying,

a movable base support at the bottom of said chair,

a back net,

a safety belt attached to the back of said chair,

an upper pair of fixed connecting assemblies attached to sides of said chair,

a lower pair of fixed connecting assemblies attached to forward sides of said chair,

a pair of movable connecting pivot assemblies,

a rear bar and a front bar, each being connected to said upper pair of fixed connecting assemblies, each member of which pair includes a pushing bar extension hole,

said front bar being of U-shape, and being made of metal, and being mounted on the front of said chair, and having its surface covered with a sponge layer,

a safety belt attached to said chair,

a pair of rear rods interconnecting said upper pair of fixed connecting assemblies, and said pair of movable connecting pivot assemblies,

a pair of bottom rods interconnecting said lower pair of fixed connecting assemblies, and said pair of movable connecting assemblies,

a pair of pushing bar means interconnected with said upper pair of fixed connecting assemblies,

control and connecting means integral with said upper pair of fixed connecting assemblies for locking the position of said pushing bar means,

said control and connecting means having a clamp, and an adjustable control arm, and a push-bar-means-engaging eccentric cam,

rear rod means interconnecting said upper pair of fixed connecting assemblies, and said pair of movable connecting pivot assemblies, and being formed of pivotably interconnected foldable sections,

a sleeve means for slidably carrying said rear rod means,

a spring within said sleeve means for urging said rear rod means in one direction,

a pair of bottom rods connected between said lower pair of fixed connecting assemblies, and said pair of movable connecting pivot assemblies, and

a rear connecting rod interconnecting members of said pair of movable connecting pivot assemblies.

4,641,845

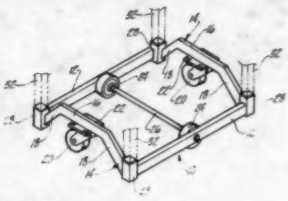
WHEELED PALLET

Timothy W. Hewitt, 18 Kensington, Pleasant Ridge, Mich. 48069

Filed Jan. 24, 1985, Ser. No. 694,604

Int. Cl.[4] B62B 3/04

U.S. Cl. 280—79.1 A 7 Claims



1. A load handling cart comprising:

a parallel pair of end members each comprising a horizontal portion having a pair of first ends, and a pair of downwardly depending angled portions extending one each from said ends, the horizontal portion and each depending angled portion of said end member lying in a common substantially vertical plane;

a parallel pair of elongated side members each having a pair of second ends and being perpendicularly attached at said second ends to said angled portions of said end members, so as to form a substantially rectangular shape having four corners at the junctures of said side and end members;

at least one pair of first wheels coaxially secured one each to said side members, at a midpoint of said side members and between said side members;

at least one second wheel secured to a midpoint of said horizontal portion of one of said end members; and

a vertical tubular member affixed to each of said four corners joining said side members and said end members, dimensioned to receive therein a cargo support placed atop said cart;

wherein said tubular members are positioned sufficiently close to the ground by said angled portions so as to come into contact with the ground prior to tippage of said cart, when said cart is subjected to a tipping force, thereby reducing the likelihood of spillage from said cart due to such force;

whereby said tubular members simultaneously received said support therein, and reduce tippage of said cart.

4,641,846

INTERLOCK SYSTEM FOR A TRAILER AND BOGIE

Leonard M. Ehrhart, Charleston, Ill., assignor to Trailmobile Inc., Chicago, Ill.

Filed Aug. 8, 1985, Ser. No. 763,945

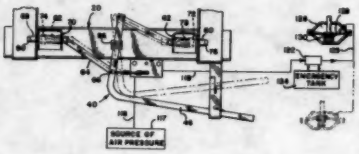
Int. Cl.[4] B60G 5/06

U.S. Cl. 280—80 B 12 Claims

5. In combination with a tractor driven trailer having a pair of tracks with spaced apertures, a structure having a plurality of wheels for supporting said trailer and having a pair of rails for slidable mounting to the tracks of said trailer, said structure including parking brake means to inhibit rotation of the wheels on such structure and parking brake chambers for receiving air pressure from a source of air pressure to selectively overcome the braking of said parking brake means;

an interlock system for securing said structure to said trailer, said interlock system comprising:

(a) a pair of opposed housing means secured to said structure and each housing means having opposed openings;
(b) a pin disposed in each housing means and adapted to move within the openings of said housing means;
(c) means for moving said pins, within the openings of said housing means, out of engagement with one set of the spaced apertures in the tracks to a selective set of apertures to secure said structure to said trailer;
(d) a contral valve and means for connecting air pressure from said source to said control valve;
(e) means connecting said control valve to said brake chambers;
(f) a handle for actuating said pin moving means;



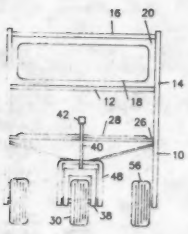
(g) a linkage coupling said pin moving means with said control valve; and means in each housing means for biasing said respective pin in a direction for securing said structure to said trailer, whereby, movement of said handle to a structure engaging position actuates said control valve to apply pressurized air to said brake means and simultaneously forces said pins into selected apertures in the tracks, and movement of said handle to a structure disengaging position causes withdrawal of said pins from the apertures in the tracks and simultaneously actuates the control valve to void the pressurized air from said source of air pressure.

4,641,847

SINGLE LEVER CONTROL WHEEL CHAIR

Ronald E. Busse, 1902 Peach St., Erie, Pa. 16502

Filed Dec. 16, 1985, Ser. No. 809,028
Int. Cl.[4] B60K *3/00*
U.S. Cl. 280—242 WC **9 Claims**



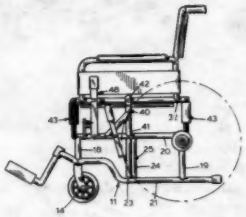
1. A folding chair comprising a frame, rear ground support means on said frame,
said frame having a downwardly and forwardly extending member,
a front wheel support,
a front wheel on said front wheel support,
manual control means attached to said front wheel support for steering said front wheel to right or left and for driving said front wheel selectively forward and in reverse,
said manual control means comprising rotatable means rotatably attaching said front wheel support to said downwardly extending member,
a front wheel propulsion means including ratchet means connecting said front wheel to said front wheel support and to said manual control means,
said manual control means being swingable to right or left to incline said front wheel support on said downwardly extending frame member to steer said folding chair right or left,
drive means comprising said manual control means being rotatable about its axis and having means to cause said ratchet to engage said wheel selectively either for forward or for rearwardly motion of said wheel depending on the direction said manual control means is rotated,
whereby said manual control means rotates said wheel forward or rearward through said ratchet,
said manual control means being swingable forward and rearward moving said ratchet forward and rearward driving said front wheel forward or rearward in a direction determined by the direction in which said manual control means has been rotated.

4,641,848

WHEELCHAIR WITH ROCKING SEAT ASSEMBLY

Robert C. Ayers, 3011 45th St., Des Moines, Iowa 50310

Filed Apr. 15, 1985, Ser. No. 723,370
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—242 WC **6 Claims**



1. An improved wheelchair that permits a user to rock while seated in the chair, said wheelchair comprising:
(a) a frame formed of spaced apart rigid side members connected together by cross braces, each of said side members including upper and lower tubular members;
(b) a pair of main wheels connected with said frame and at leat one of which serves as a driving wheel for the chair;
(c) at least one caster wheel pivotally connected with said frame;
(d) a seat portion having opposite tubular support members that are pivotally connected to said upper tubular members of said frame side members;
(e) bias means to normally maintain said seat portion in a desired alignment when the chair is unoccupied and to permit the seat to yieldably rock about its pivotable connection with said frame.

4,641,849

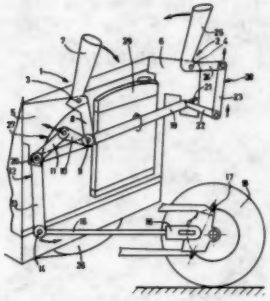
MANUAL ACTUATING DEVICE, ESPECIALLY FOR STEERING A MOTORCYCLE

André De Cortanze, St. Cloud, France, assignor to Elf France, Paris, France

Filed Jun. 7, 1985, Ser. No. 742,578
Claims priority, application France, Jun. 14, 1984, 84 09321
Int. Cl.[4] B62K *11/14*
U.S. Cl. 280—270 **3 Claims**

1. A manual actuating device of a steering rod which controls at least a guiding wheel of a vehicle through two handles that are movable in rotation in a substantially vertical plane, each connected to one bar of a three bar set, a first bar of each of the three bar sets forming with each of the respective handles a lever hinged to the vehicle, a third bar of each set being integral with a connecting bar rotatable about its longitudinal axis, the longitudinal axis of the connecting bar being transverse to the longitudinal axis of the vehicle, the connecting bar

being integral in rotation with a return arm which is pivotally connected to the steering rod wherein a second bar of one three bar set forms a first angle with the first bar and a second angle with the third bar, wherein one of the first and second



angles is greater than 180° and wherein a second bar from a second three bar set forms a third angle with the first bar and a fourth angle with the third bar, wherein both the third and fourth angles are less than 180°.

4,641,850

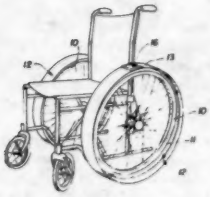
WHEELCHAIR ADAPTER WHEEL

James S. Rice, 2316 Jackson Ave., and William L. Klohn, 1100 3rd St., South, both of Naples, Fla. 33940

Filed Aug. 26, 1985, Ser. No. 769,347

Int. Cl.[4] B62J *11/00;* **B62M** *1/14*

U.S. Cl. 280—289 WC **8 Claims**



1. A wheelchair adapter wheel comprising an encircling band which is thin in gage and having a width that is wide in comparison to the width of a wheelchair propelling wheel and having separated first and second ends forming a space therebetween and being adapted to be placed around the circumference of a wheelchair propelling wheel, means on the interior of said band engageable with a wheelchair propelling wheel to center said band relative to said propelling wheel, and an elastic connector means across the space between said separated first and second ends of the band including a stretchable web on the exterior surface of the band having substantially the same width as the band, a first connector plate having a width substantially the width of said band and extending laterally across said band and secured to one end of the stretchable web, means anchoring the first connector plate and said one end of the stretchable web to the exterior of the band near and somewhat circumferentially spaced from said first end of the band, a second connector plate having a width substantially the width of said band and extending laterally across said band and secured to the other end of the stretchable web and being adapted to extend across the space between said separated first and second ends, said second connector plate having a leading end overlaying the exterior surface of said band adjacent the second end with radially inwardly extending claws, and the band being provided near its second end with at least one set of apertures formed therethrough to releasably receive said claws when said web is being stretched circumferentially of the adapted wheel and is under tension, whereby said web and second connector plate are in overlaying contact with substantially the entire width of the exterior surface of and in substantially the same circumferential plane of the band when said claws are received in said apertures and said stretchable web is under tension.

4,641,851

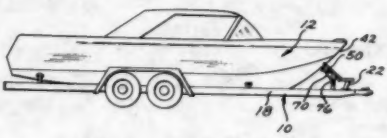
AUTOMATIC LATCH BETWEEN TRAILER AND BOAT

Rudy D. Knies, 6609 State Rd. 31 E., Sellersburg, Ind. 47172

Continuation-in-part of Ser. No. 698,658, Feb. 6, 1985, abandoned. This application Jan. 31, 1986, Ser. No. 824,954

Int. Cl.[4] B60P *3/10*

U.S. Cl. 280—414.1 **14 Claims**



1. An automatic boat latching device adapted to be mounted to a fixed upright framework on the front of a self-loading boat trailer, where the upright framework includes a bow-receiving cradle, said latching device comprising:

a. a latch member adapted to be pivotally mounted in a vertical plane to the upright framework, the rear end of the latch member having an upwardly and forwardly inclined hook while the front end of the latch member having a counterweight normally urging the hook to a raised position;

b. whereby the forward loading movement of the boat onto the trailer causes a boat eye mounted on the bow of the boat to deflect the inclined hook downwardly into a lowered position until the boat eye passes thereover forwardly of the inclined hook and then the counterweight returns the hook to a raised position where the hook interlocks with the boat eye for locking the boat to the trailer; and

c. an adjustable handle mounted to the framework, and a tension spring means joined at one end to the hook portion of the pivoted latch member and at its other end to the adjustable handle;

d. where the handle may be locked in one position to relax the tension of the spring means during a boat-loading operation onto the trailer, and may be locked in an alternate position to increase the tension of the spring means during a boat-unloading operation from the trailer.

4,641,852

RESILIENT COUPLING

Gerrit Kerst, and Hendrik Kerst, both of Johannesburg, South Africa, assignors to Brelko (Proprietary) Limited, Johannesburg, South Africa

Filed Nov. 4, 1985, Ser. No. 794,446

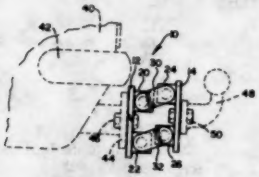
Claims priority, application South Africa, Nov. 16, 1984, 84/8966

Int. Cl.[4] B60D *1/00*

U.S. Cl. 280—489 **3 Claims**

1. A trailer coupling comprising a plurality of torque elements having outer members, at least one torque element being resiliently yieldable under torque, arranged to permit relative movement between the drafting vehicle and the trailer in the direction of the traction force, and adapted to resist such relative movement to thereby damp the relative movement, and two spaced attachment plates, one for attaching the coupling

to a drafting vehicle and the other for attaching it to a trailer, each attachment plate being integral in one piece from the



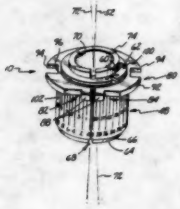
same sheet material with the outer members of a pair of torque elements.

4,641,853

METHOD AND STRUCTURE FOR CASTER AND CAMBER ADJUSTMENT

John Specktor, Golden Valley, and Gerald A. Specktor, St. Paul, both of Minn., assignors to Shim-A-Line, Inc., Minneapolis, Minn.

Filed Jun. 12, 1985, Ser. No. 744,018
Int. Cl.[4] B62D *17/00*
U.S. Cl. 280—661 **20 Claims**



1. A ball joint bushing assembly for adjusting camber and caster, mounted on a vehicle steering structure of the type having an axle, a yoke extending from the axle and having an opening for receiving the bushing assembly, and ball joint means having a stud cooperating with the bushing assembly to pivotally secure a wheel spindle assembly on the yoke, the ball joint bushing assembly comprising:

circumferentially expansible sleeve means having a substantially cylindrical outer surface with substantially the same diameter as that of the opening in the yoke, said sleeve means having a cylindrical first end to receive collar means, and having an inner bore extending therethrough along an axis eccentrically disposed with respect to the axis of the cylindrical outer surface;

scale means disposed around the outer surface of the sleeve means, having a plurality of selectively positioned indicia, each indicium representing a camber and caster setting;

circumferentially expansible collar means carrying an index mounted on and surrounding the first end of the sleeve means, said collar means having a substantially circular opening therethrough of substantially the same diameter as the first end so as to be circumferentially movable therearound to enable alignment of the index with a preselected indicium, the index further denoting the proper orientation of the bushing assembly when mounted on the yoke; and

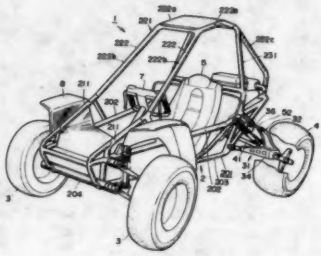
means for expanding said expansible sleeve means into locking engagement with the yoke to maintain the sleeve means in the desired angular position corresponding to the desired camber and caster setting.

4,641,854

WHEEL SUSPENSION FOR A VEHICLE

Tatsuo Masuda; Akito Enokimoto, and Kazutoshi Ohtsuka, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,675
Claims priority, application Japan, Jul. 25, 1984, 59-154243; Jul. 25, 1984, 59-112637[U]
Int. Cl.[4] B60G *3/00*
U.S. Cl. 280—701 **4 Claims**



1. A wheel suspension in a vehicle having a frame structure and drive shaft mounted on said frame structure for driving a wheel to rotate about a wheel shaft thereof, said wheel suspension comprising:

a trailing arm having a front end pivotably connected to said frame structure and a rear end supporting said wheel shaft of the wheel;

a propeller shaft having a first end coupled to said drive shaft through a first universal joint and an opposite end coupled to said wheel shaft through a second universal joint, said propeller shaft extending substantially transversely of said frame structure;

a link rod having a first end pivotably connected to said frame structure and an opposite end pivotably connected to said rear end of said trailing arm, said link rod being spaced substantially vertically from said propeller shaft and extending substantially transversely of said frame structure; and

damper means supporting said trailing arm on said frame structure for dampening movement of said trailing arm with respect to said frame structure;

said propeller shaft, said link rod, and said trailing arm jointly constitute a link mechanism for controlling movement of said wheel shaft to translate the wheel shaft when said trailing arm is vertically swung; and

said damper means comprises a cushioning unit composed of a shock absorber and a coil spring disposed therearound, said shock absorber having a first end pivotably connected to said frame structure and an opposite end pivotably connected to said trailing arm.

4,641,855

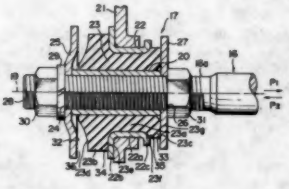
MOUNTING STRUCTURE WITH ASYMMETRICAL CUSHIONING PERFORMANCE AND VEHICLE SUSPENSION INCORPORATING THE SAME

Toshio Izumi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 14, 1984, Ser. No. 681,680
Claims priority, application Japan, Jul. 27, 1984, 59-156694
Int. Cl.[4] B60G *11/22*
U.S. Cl. 280—716 **6 Claims**

1. A mounting structure comprising a spool-like retainer element having a cylindrical portion and a pair of flange portions connected to opposite axial ends of said cylindrical portion, an annular cushioning member made of a rubber-like elastic material and mounted around said cylindrical portion of said spool-like retainer element, an annular retainer element

positioned around said cushioning member on said cylindrical portion and between said pair of flange portions of said spool-like retainer element, said annular cushioning member having a first annular cushioning layer means for dampening a force in a first axial direction, said first layer being positioned between one of said flange portions of said spool-like retainer element and one side of said annular retainer element and a second annular cushioning layer means for dampening a force in a second axial direction opposite said first axial direction, said



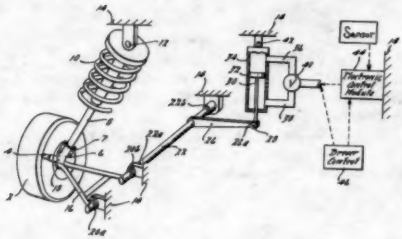
second layer being positioned between the other of said flange portions of said spool-like retainer element and an opposite side of said annular retainer element, only one of said first and second annular cushioning layer means being formed with an annular gap extending over a substantial radial depth thereof at an axial position located between an axial end of said one annular cushioning layer means adjacent the corresponding flange portion of said spool-like retainer element and an axially intermediate portion thereof.

4,641,856

MOTOR VEHICLE ANTI-ROLL STABILIZER SYSTEM

Thomas G. Reichenbach, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 24, 1985, Ser. No. 758,613
Int. Cl.[4] B62D *9/02*
U.S. Cl. 280—772 **19 Claims**



1. A suspension system for independently controlling a vehicle wheel comprising:

a chassis;

a suspension component subject to rotational movement relative to the chassis during jounce and rebound movement of said suspension system with said rotational movement occurring about a fixed axis of rotation;

a torsion bar attached at its first end to said suspension component and pivotally attached at its second end to said chassis, with the longitudinal axis of said torsion bar being generally coincident with said axis of rotation of said suspension component; and

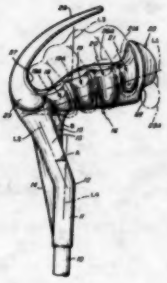
means for selectively restraining the rotation of said second end of said torsion bar relative to said chassis so as to restrain jounce and rebound motion of said wheel independently of any other wheel of said vehicle.

4,641,857

SKI POLE HAND GRIP

Ernest A. Gailiunas, 10 Main St., Cotuit, Mass. 02635

Filed Jun. 28, 1985, Ser. No. 749,671
Int. Cl.[4] A63C *11/22*
U.S. Cl. 280—821 **15 Claims**



1. A ski pole hand support member attached to a ski pole shaft and comprising;

a support base adapted to be attached to the top of the ski pole shaft,

said support base comprising a first section for connection to the ski pole and an integral second section,

and a hand grip integrally supported from the support base second section and having a force center and means for receiving the skier's hand,

said support base second section being disposed at an angle A to the ski pole shaft axis,

said angle A being in a medial-lateral plane of the skier,

the angular displacement of the support base second section disposing the top thereof in a position displaced on one side of the ski pole shaft axis,

said hand grip being supported from the support base second section from one end of the hand grip with the other end of the hand grip free and terminating on the other side of the ski pole shaft axis,

said hand grip being disposed at an angle B to the normal to the ski pole shaft axis,

said angle B being in a medial-lateral plane of the skier,

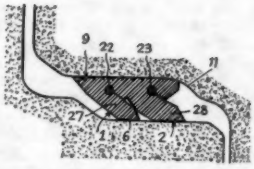
the angular displacement of the support base second section and hand grip disposing the force center of the hand grip in line with the ski pole shaft axis.

4,641,858

GASKET INCORPORATING IMPLANTS FOR INTERFITTING PIPES

Marius Roux, Caluire, France, assignor to Societe Anonyme: SABLA, Dardilly, France

Filed Jun. 20, 1984, Ser. No. 622,641
Claims priority, application France, Jun. 22, 1983, 83 10614
Int. Cl.[4] F16L *21/00*
U.S. Cl. 285—94 **14 Claims**



1. For use with interfitting pipes having a gap therebetween, a gasket comprising:

an outer peripheral face having a succession of annular ribs each having a cross section in the form of an asymmetrical tooth;

an inner peripheral face having a plurality of mouldings of prismatic cross section;

a first and a second transverse edge joining said outer and inner peripheral faces; and

a plurality of rigid annular implants, wherein

said prismatic cross section is inclined toward said first transverse edge, and

said gasket being made of elastically deformable material and shaped in a cross section having an overall thickness greater than the gap between the ends of the interfitting pipes to be joined, and having a plurality of annular housing openings in its cross section thickness and having access slots from said inner peripheral face to each said annular housing openings, each said annular opening being adapted to receive said rigid annular implants to exert a stress thereon, wherein

the annular housing openings have a diameter less than that of the implants prior to the applications of said implants.

4,641,859

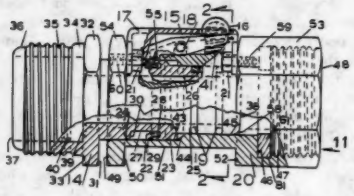
COUPLING HAVING SPRING BIASED LOCKING MEANS

Tom Walters, 2102 Mason Blvd., Point Pleasant, W. Va. 25550

Filed Mar. 13, 1986, Ser. No. 839,224

Int. Cl.[4] F16L *37/12*

U.S. Cl. 285—27 **34 Claims**



1. In combination with a pair of axially overlapping conduit members with O-ring seal elements groove seated on the inner member at the seal area in an interference fit between the members wherein said conduit members are adapted to be rotatable relative to each other about a common axis, a coupling assembly notably with conduit attachment ends, wherein the outer member with an outwardly axially directed centrally hinged rocker arm member with desirable low compact design comprising a raised button with an inner socket that partially receives and guides a compression spring member inwardly positioned between said button and over a guide boss on an outer surface of said outer member and a hook configuration on the opposite end of said rocker arm member, wherein said hook configuration normally protrudes radially inward through an aperture in said outer member to subsequently engage a radially outward annular hook and groove within an inward annular recess formation of the inner member upon the couple action, wherein said rocker arm member is capped by a closure bonnet member with an access aperture for said button radial swing passage wherein with the above noted attachments to the outer member represents said outer member assembly as a unit, whereupon during the couple action as said inner member appropriate end is axially inserted in any manner into the relatively lengthy guide and seal element receiving chambers of said outer member the hook configuration of said rocker arm member is initially moved radially outward as annular radial configuration end of the inner member wedgingly contacts a bevel on said hook configuration as annular bevel at seal chamber in said outer member and annular bevel at said hook and groove formation of said inner member radially center said inner member into an axial alignment with the outer member, then said hook configuration moves further radially outward against the bias of said spring member as a radially outward bevel on said annular hook and groove formation on said inner member wedgingly contacts said bevel on said hook configuration of the rocker arm member until said hook of said inner member passes under and past said hook configuration, whereupon the radially outward reacting force of said spring member at button end of the rocker arm member positions said hook configuration radially inward into said annular recess of said hook and groove formation of the inner member to an appropriate abutment and positioned for the interlock engagement of the hook of the hook configuration with said hook and groove formation representing the mechanical couple action and positioning of couple parts of the coupling assembly in a mechanically coupled state, whereupon as pressurized fluid is subsequently introduced within the coupled assembly the related column end force tends to axially separate the coupled members one from the other to cause said hook configuration of said rocker arm member hinged to the outer member to move in the desirable direction into a positive interlocked engagement with said annular groove and be radially retained therein by said hook of said hook and groove formation of the inner member representing the coupled parts in the automatic pressure lock positions when the coupled assembly is in the pressure locked coupled state, whereupon uncoupling the conduit members is accomplished when pressurized fluid is absent within the coupled assembly and the inner member is further inserted into the outer member to where appropriate surfaces abut at which time the hook configuration of said rocker arm member is free of the interlocking engagement the button of said rocker arm member is manually pushed radially inward against the bias of said spring member which action due to said rocker arm member hinging arrangement at hinge pin member in hinge boss of the outer member causes said hook configuration to swing radially outward into said closure bonnet member inner chamber and out of the interlocking engagement area to permit the withdrawal of the inner member at uncoupling the assembly, whereupon the manual release of said button the reaction force of said spring member returns said button radially outward and said hook configuration of rocker arm member radially inward and automatically positioned in the automatic cocked position for future couple actions.

4,641,860

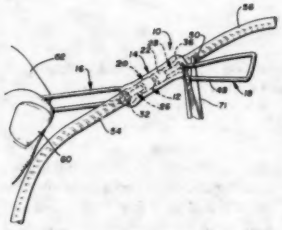
COUPLING FOR FLEXIBLE TUBING

Robert L. McMickle; James T. Rumbaugh, and Robert L. Netsch, all of Spirit Lake, Iowa, assignors to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Jun. 25, 1984, Ser. No. 624,412

Int. Cl.[4] F16L *35/00*

U.S. Cl. 285—38 **29 Claims**



1. A coupling for fluid connection with flexible tubing, the coupling comprising:

a rigid connector with a fluid passage therethrough, the connector including a cylindrical main portion having a diameter substantially equal to the outside diameter of the flexible tubing and having a surface with at least one

annular groove therein, and at least a first cylindrical male end portion having a diameter substantially equal to the inside diameter of the flexible tubing and having an enlarged diameter rigid distal end portion; and

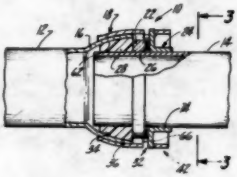
an elastic sleeve member having a main portion gripping section for elastically circumferentially gripping the main portion of the connector and including an interior gripping member insertable in the annular groove of the main section; and at least a first tubing gripping section positioned in a position overlapping the main portion gripping section and movable to an elastically engaged position over the tubing and the male end portion after the male end portion of the rigid connector is inserted into the tubing.

4,641,861

FLEXIBLE JOINT FOR PIPES

Raymond Scoboria, Dearborn, Mich., assignor to O.E.M. Technical Sales, Inc., Southfield, Mich.

Filed Jun. 1, 1984, Ser. No. 616,308
Int. Cl.[4] F16L *21/02, 27/04, 37/24*
U.S. Cl. 285—39 **6 Claims**



1. A flexible joint for pipes, said joint comprising:

a first pipe having a flared end with a curvature forming a sealing socket,

a locking ring disposed over said flared end and having a socket portion angularly movable on the outside of said flared end, said locking ring having a first bayonet coupling member thereon,

a second pipe having a free end,

a locking flange rotatably and slideably disposed on the outside of said second pipe and having a second bayonet coupling member thereon,

retaining means on said second pipe between the free end thereof and said locking flange for preventing said locking flange from moving beyond a predetermined position on said second pipe toward the free end of said second pipe,

a sealing ring disposed on said second pipe between the free end thereof and said locking flange, said sealing ring having a surface seated in and corresponding in shape to said sealing socket,

and a compressible resilient member disposed within the confines of said locking ring between said locking flange and said retaining means,

said bayonet coupling members being complementary to and engageable with each other whereby said joint may be assembled and disassembled by aligning said coupling members, pressing said locking ring and said locking flange together against the resistance of said resilient member and rotating them relative to each other.

4,641,862

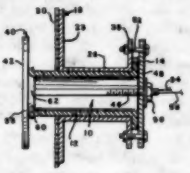
ROTATIONALLY MOLDED NOZZLE LINER AND METHOD FOR ITS INSTALLATION

Randy A. Gardiner, 8255 Fruitvale Ave., Moorpark, Calif. 93021

Filed Mar. 25, 1985, Ser. No. 715,888
Int. Cl.[4] F16L *58/10*
U.S. Cl. 285—39 **15 Claims**

1. The combination of a nozzle liner free of internal stresses and seams and a vessel having an internal corrosion liner and a nozzle extending externally of the vessel with a distal ring flange, with said nozzle liner received in said nozzle and having:

(a) a sleeve body having an outer diameter substantially equal to the inside diameter of said nozzle and a length greater than the length of said nozzle to provide an inward end which projects inwardly beyond the inside wall of



said vessel and which is bonded to said corrosion liner of said vessel; and

(b) an integral end flange on the outer end of said liner and abutted against the ring flange of said nozzle;

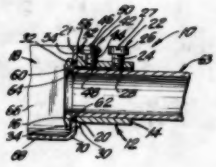
said nozzle liner being formed by rotational molding a powdered thermoplastic resin to form said nozzle liner with said integral ring flange free of internal stresses and seams.

4,641,863

CONNECTOR FOR COUPLING A CONDUIT TO A JUNCTION BOX

Sami Shemtov, 18 Tryon Ave., Staten Island, N.Y. 10312

Filed Nov. 12, 1985, Ser. No. 797,043
Int. Cl.[4] F16L *3/04*
U.S. Cl. 285—158 **11 Claims**



1. A connector for coupling a conduit to a junction box, said connector comprising:

an elongated tubular body portion having a proximal end for insertion into a circular aperture in one wall of the junction box, and a distal end to receive the conduit;

a pair of radially projecting first and second flange means longitudinally spaced apart at said proximal end of said body portion for straddling an edge wall of the circular aperture in the junction box;

said second flange means being positioned inside the junction box and said first flange means being positioned outside the junction box;

said first flange means including an annular rim having a peripheral diameter greater than a diameter of the circular aperture in the junction box so that said annular rim is prevented from passing through the circular aperture;

said second flange means including first and second arcuately extending radially projecting tabs for engaging wall portions around the circular aperture in the junction box, said second tab being coplanar with and diametrically opposed to said first tab;

an outer edge of said second tab extending radially further from an axis of said body portion than an outer edge of said annular rim;

body end means for permitting said proximal end of said body portion to swing through the circular aperture after said second tab has been inserted through the circular

aperture so that said first tab can pass through the circular aperture;

said body end means including an outer edge of said first tab extending radially less from said axis of said body portion than said outer edge of said annular rim so that a radially projecting length of said first tab is shorter than a radially projecting length of said second tab, and a diameter of a circular part of said tubular portion disposed between said pair of first and second flange means being less than the diameter of the circular aperture in the junction box, and also a distance measured from said outer edge of said first tab to a section of said circular part of said tubular body portion disposed between said second tab and said annular rim being less than the diameter of the circular aperture in the junction box so that said first tab can pass through the circular aperture after said second tab has been inserted through the circular aperture; and

eccentric cam means supported on said body portion for rotation into an interference engagement with an outer surface of the apertured one wall of the junction box to clamp said connector in place relative to the junction box;

said eccentric cam means including a post radially projecting from said body portion, said post supporting an offset head portion for rotation about an arcuate path into a clamping engagement with the outer surface of the junction box at a point along said arcuate path, said offset head portion being releasable from said clamping engagement by an opposing rotation;

said arcuate path of said offset head portion extending into the space between said pair of first and second flange means;

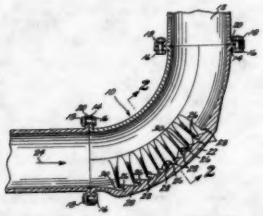
a double beveled periphery being provided about said offset head to define a peripheral knife edge for biting into the outer surface of the junction box.

4,641,864

WEAR RESISTANT PIPE BEND FOR SLURRY TRANSPORT

Otto R. Heine, Poway, and Peter M. Riede, La Jolla, both of Calif., assignors to R & H Technologies, Inc., Minneapolis, Minn.

Filed Feb. 16, 1984, Ser. No. 580,873
Int. Cl.[4] F16L *43/00*; B65G *53/54*
U.S. Cl. 285—179 **4 Claims**



1. A pipe bend adapted to be joined to two sections of a slurry transporting pipe so as to form an elbow between said two pipe sections, the pipe bend comprisng a curved conduit including:

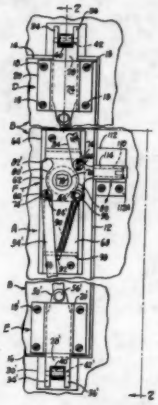
a plurality of spaced protrusions formed in the interior wall of the conduit in the area most exposed to impingement by solid particulate material moving as a slurry in the conduit, a plurality of pockets being formed between the spaced protrusions, the wall having the spaced protrusions being substantially thicker than the rest of the wall of the conduit, the spaced protrusions including a leading edge having maximum exposure to solid particulates moving in the slurry and having an outer cladding of a wear resistant material different from the material of the rest of the conduit, the pockets being adapted for capturing solid particles from flow of the slurry in the conduit, whereby particles captured in the pockets form a protective zone on the wall of the conduit to reduce wear and abrasion thereon.

4,641,865

CLOSURE CONTROL MECHANISM

John V. Pastva, Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Continuation of Ser. No. 431,713, Sep. 2, 1982, abandoned. This application Aug. 1, 1985, Ser. No. 762,018
Int. Cl.[4] E05C *9/04*
U.S. Cl. 292—5 **6 Claims**

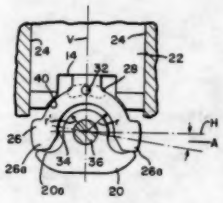


1. In a closure control mechanism attached adjacent to a free edge of a door swingable into and out of an opening with in a wall, a dead bolt lock assembly including a frame immovably mounted on the door and a pair of dead bolts, each having an end, the dead bolts movable within the frame for extension and retraction of the ends of the dead bolts into and out of engagement with a pair of keeper surfaces located on the wall and extending in the direction of extension and retraction; a first surface on one end of each dead bolt transverse to the direction of movement, angularly oriented for substantially the full thickness of the bolt, facing in the direction of extension, facing in the direction of the door swings when the door is swung out of the opening in the wall, facing the keeper surface when the door is in the opening and when the dead bolt lock assembly is in an extended position and facing the door when the dead bolt lock assembly is in a retracted position; a rotatable member in said one end of each dead bolt engageable with the keeper surface to facilitate both extension and retraction of the bolt relative to the keeper; a second surface at said one end of each dead bolt extending in the direction of bolt movement, facing the keeper surface when the dead bolt lock assembly is in an extended position and facing the door when the dead bolt lock assembly is in a retracted position, said rotatable member extending beyond said second surface in rolling engagement with the door or the keeper surface during extension or retraction of the dead bolts; a manual bolt-operating member rotatably supported in the frame; and a pair of rod members operatively connected to the dead bolts and to the bolt-operating member eccentrically of the axis of rotation thereof to extend and retract the dead bolts concurrently.

4,641,866
LEVER HANDLE DOOR TRIM

Paul J. Haeck, and Gary R. Jacobs, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed Nov. 12, 1985, Ser. No. 797,114
Int. Cl.[4] E05B 3/00
U.S. Cl. 292—336.3 **6 Claims**



1. Lever handle door trim, comprising:

a slider, movable along a vertical axis for operating an exit device latching mechanism for a latchbolt, to cause retraction of said latchbolt;

a cam, for effecting movement of said slider;

said cam having a body portion with an opening formed therein in which to receive a lever handle shaft;

said opening having a radial center defining a rotary axis for such a lever handle shaft;

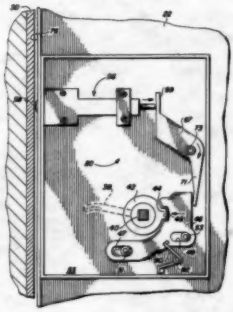
said cam further having a pair of lobes extending outwardly from opposite sides of said body portion along a horizontal plane; and

means interposed between, and engaging both, said slider and said cam, and adjustable for causing said cam to be selectively displaced through an acute angle, relative to said rotary axis, to dispose said cam at a tilt relative to said horizontal plane.

4,641,867
DOOR CLOSURE ASSEMBLY

Arthur V. Geringer, 4611 Deseret, Woodland Hills, Calif. 91364; Richard G. Geringer, 28834 Barragan St., and David A. Geringer, 5382 Cheseboro Rd., both of Agoura, Calif. 90301

Filed Jul. 22, 1985, Ser. No. 757,438
Int. Cl.[4] E05C 1/16
U.S. Cl. 292—336.3 **4 Claims**



1. An improved entry closure assembly, said assembly comprising, in combination:

(a) a door frame including a door jamb disposed in an entry way;

(b) a door secured to said frame for movement between open and closed entry way positions;

(c) primary door opening and closing means disposed in said door and said door jamb;

(d) a door handle hub rotatably secured to said door and operatively connected to said door opening and closing means; and,

(e) door handle hub locking means comprising

(i) a locking plate secured around said door handle hub in said door, said plate having a protrusion extending from the outer periphery thereof,

(ii) a moveable slide bolt member having a recess therein adapted to receive said protrusion,

(iii) support means in said door connected to said slide bolt member for holding said slide bolt member and permitting movement of said slide bolt between a first unlocked hub position and a second handle hub-locking position and,

(iiii) biasing means in said door connected to said slide bolt for biasing said slide bolt member into said locked and said unlocked positions,

(f) actuator means for causing movement of said slide bolt member,

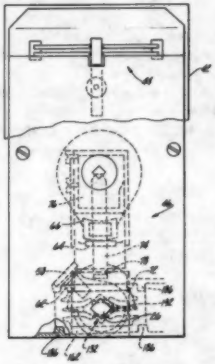
(g) lost-motion means disposed between said actuator means and said slide bolt member, and

(h) means to reverse the direction of force applied by said actuator means to said slide bolt member to enable movement of said slide bolt member in a direction opposite to the movement of the actuator means.

4,641,868
RECENTERING FOR SHAFTS OF LOCKS AND OTHER MECHANISMS

William L. Miron, Northville, Mich., assignor to Computerized Security Systems, Inc., Troy, Mich.

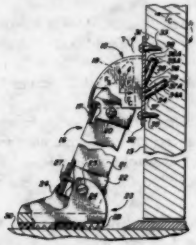
Filed Aug. 22, 1984, Ser. No. 643,055
Int. Cl.[4] E05C 13/00
U.S. Cl. 292—336.3 **14 Claims**



1. In a lock mechanism of the type comprising a bolt, an operating shaft, means for coupling the shaft to the bolt for actuating the bolt in response to rotation of said shaft from a center position, a return spring operatively coupled with said shaft for applying a return torque thereto toward the center position, said return torque varying directly with angular displacement of the shaft from the center position over a predetermined range of displacement of said shaft, the improvement comprising:

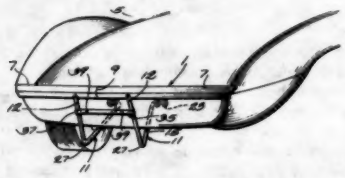
a recentering spring means operatively coupled with said shaft for applying a restoring torque thereto toward the center position, said restoring torque varying inversely with angular displacement of the shaft from the center position over said predetermined range of displacement.

4,641,869
DOOR BRACE
Lawrence Johnson, P.O. Box 1472, Clovis, N. Mex. 88101
Filed May 23, 1986, Ser. No. 866,276
Int. Cl.[4] E05C *17/44*
U.S. Cl. 292—339 **1 Claim**



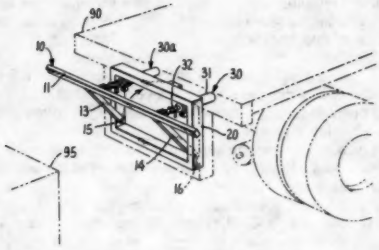
1. A door assembly, including
(a) a frame;
(b) a door having
(i) a vertically oriented face, and
(ii) an upwardly canted channel formed in said door,
said door being mounted on said frame for movement between two operative positions,
a portion of said door being positioned intermediate said upwardly canted channel and said face;
(c) a support member including
(i) a downwardly opening recess,
(ii) a back surface contacting said face of said door, and
(iii) an anchor member attached to said back surface and extending upwardly into said channel; and,
(d) an elongate brace arm having
(i) an upper end positioned in said recess, and
(ii) a lower end spaced away from said door and adapted to frictionally fixedly engage said floor when a displacement force is applied to said door in a direction generally parallel to said floor and toward said lower end,
said anchor member being forced against said intermediate portion of said door to generally prevent movement of said upper end and support member away from said door when said displacement force is applied to said door.

4,641,870
BUMPER GUARD
Neal R. Heyman, 11313 W. Country View Dr., Mequon, Wis. 53092
Filed Nov. 8, 1985, Ser. No. 796,251
Int. Cl.[4] B60R *19/02*
U.S. Cl. 293—102 **10 Claims**



1. A bumper guard for protecting a selected portion of an automobile body comprising guard means for covering the selected portion of the automobile body and shaped complementary to the automobile body; and bracket means attached to the automobile frame for holding the guard means in position on the selected portion of the automobile body, and wherein the guard means comprises a V-shaped angle iron adapted to fit over the selected portion of the automobile body and wherein the guard means further comprises a padding secured to the angle iron for interposition between the angle iron and automobile body to thereby protectively separate the angle iron from the automobile body.

4,641,871
SAFETY BUMPER AND AIR BRAKE ACTUATOR
Lanny Vaughn, 4334 Heights St., Pittsburg, Calif. 94565
Continuation-in-part of Ser. No. 394,257, Jul. 1, 1982, abandoned. This application Mar. 29, 1985, Ser. No. 717,567
Int. Cl.[4] B60R *19/00*
U.S. Cl. 293—118 **4 Claims**



1. A safety bumper and air brake actuator for use in conjunction with the air brake system of the tractor-trailer, wherein the existing air brake system of said trailer includes a emergency air supply tank and a triple valve adjacent the rear wheels of the trailer, comprising:
retractable bumper means carried at the rear of said trailer comprising a horizontal bar which extends the width of said trailer and a pair of parallel arms connected to said bar, extending downwardly therefrom and being hingedly connected to the frame of said trailer, such that as said tractor-trailer is travelling forward at highway speed, said retractable bumper means is fully retracted so that said horizontal bar lies against the frame of said trailer in its retracted position,
bumper extension means which operates in response to the position of the tractor transmission indicator to extend said bumper means when the tractor transmission is placed in reverse and to fully retract said bumper means when the tractor transmission is taken out of reverse,
cylinder means, having a piston slidably mounted in a sleeve, connected to said bumper means such that as said bumper means engages an obstruction at the rear of said trailer, said piston is driven into said sleeve,
switch means responsive to the position of said piston,
solenoid means positioned adjacent the rear wheels of said trailer and pneumatically connected between the trailer's existing emergency air supply tank and existing triple valve of said trailer, and
control means connected to said switch means and said solenoid means such that when said piston is driven to a predetermined position within said sleeve, said switch means and control means cooperate to actuate and open said solenoid means whereby high pressure air from said trailer emergency air tank passes through said solenoid means and said triple valve and immediately actuates and locks the brakes of said trailer without affecting the brakes of the tractor.

4,641,872

COLLISION DAMPER HAVING A DAMPING PISTON AND A DEFORMABLE TUBE CONNECTED THERETO

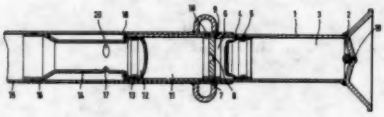
Karl-Heinz Löhr, Eitorf; Ewald Kohberg, Eitorf-Irlenborn; Werner Kuchheuser, Windeck-Stromberg, and Wolfgang Dorhmann, Eitorf-Irlenborn, all of Fed. Rep. of Germany, assignors to Boge GmbH, Eitorf, Fed. Rep. of Germany

Filed May 22, 1985, Ser. No. 736,803

Claims priority, application Fed. Rep. of Germany, May 23, 1984, 3419165

Int. Cl.[4] A47C 7/14

U.S. Cl. 293—133 19 Claims



1. An impact damper for a motor vehicle having outer tubular means and inner work piston means, said work piston means being disposed within a portion of said outer tubular means and being firmly attached at one end thereof at an extremity portion of said outer tubular means;

means for interacting with a relative movement of said work piston means for transferring forces produced during impact with said outer tubular means to said work piston means;

fluid means disposed for transferring at least a portion of said forces upon said work piston means to said fluid means during impact for slowing down said motor vehicle during a collision;

said work piston means having an interface portion at an end opposite said end attached to said extremity portion of said outer tubular means for interfacing with said fluid means;

said fluid means comprising an internal tube means defining a hydraulic liquid containing chamber, said liquid therein making contact with said interfacing portion;

said liquid containing chamber having throttle means therein for throttling liquid flow within said chamber;

means for retaining said work piston means in a predetermined position relative to said fluid means and said outer tubular means at times when said forces of impact are not present;

said means for retaining said work piston means being disposed such that said work piston means is movable along a substantial portion of said work piston's length with respect to said retaining means; and

said work piston means including a deformable tube having means for mechanically deforming and shortening when forces transferring from said means for interacting exceed a predetermined range.

4,641,873

SANITARY FECES COLLECTION DEVICE

George H. Nurnberger, 11250 Playa St., Space 85, Culver City, Calif. 90203

Continuation of Ser. No. 716,454, Mar. 27, 1985, abandoned, which is a continuation-in-part of Ser. No. 590,038, Mar. 15, 1984, abandoned. This application Mar. 7, 1986, Ser. No. 838,410

Int. Cl.[4] A47F 13/06

U.S. Cl. 294—1.4 8 Claims

1. A scoop or the like structure comprising an elongated handle member, having a first hand gripping end and a second end operatively connected to a frame member comprising a first rectangular support member transverse to the axis of said handle member and a second intermediate C-shaped support member, lying in about the same lane as said handle member, said first rectangular suport member being connected to said second intermediate C-shaped support member and defining therebetween an open sided support cage adapted to receive a disposable member which extends outwardly from and beyond said open sided support cage and into which items are to be scooped and retained; a flap member secured to the front portion of said first rectangular support member and operatively associated therewith for pivotal movement with a con-

gruently shaped enclosure element of said disposable member into an open and a closed position said flap member being adapted for releasable attachment to said congruently shaped enclosure element of said disposable member; and means operatively associated with said elongated handle member to actuate said flap member into either said open or closed positions.

4,641,874

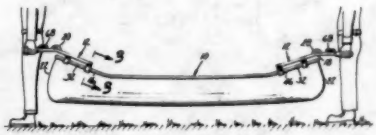
PORTAGING DEVICE

Leslie J. Grenzer, 7450 Indian Trail, Rockford, Minn. 55373

Filed Mar. 29, 1984, Ser. No. 594,763

Int. Cl.[4] A45F 3/15; B65G 7/12

U.S. Cl. 294—15 1 Claim



1. A canoe portaging device comprising: at least one handle adapted to be removably secured to the bow or stern of a canoe, said handle being removably secured to the canoe by securing at least two transverse members removably, transversely secured to said handle and clamping means adjustably secured to each end of said transverse members and adapted to selectively engage the gunwale of the canoe, said handle being further adapted to remain approximately horizontal and independent of the angle of the bow or stern of the canoe by providing said handle with an obtuse angle and a reinforcement means for strengthening said angle; and a weight transfer means comprised of a belt adapted to be worn by the canoeist and a mating member secured to said handle and adapted to releaseably mate with said belt.

4,641,875

DEVICE FOR THE CONNECTION OF COMPONENTS AND TENSIONING AND/OR CONTROL DEVICES WITH BELTS

Herrn H. Speich, Hüttlingen, Fed. Rep. of Germany, assignor to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co., Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,164

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3344485

Int. Cl.[4] A44B 11/00; B66C 1/10

U.S. Cl. 294—82.11 14 Claims

1. A device for the connection of components-such as hooks, eyes, shackles, or chain links-with belts (5) which device comprises two cross-members (7,8) disposed one behind the other

between two side walls (1,2), one (7) of which cross-members (7,8) supports with part of its circumference a single belt layer formed by a closed loop and the other (8) of which supports with part of its circumference a double belt layer formed by an open loop, and of which cross-members (7,8) at least that one (7) which supports the single belt layer is mounted detachably

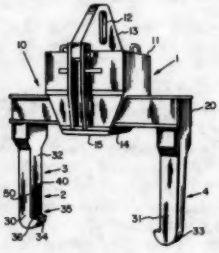
in holes (12) arranged mutually aligned in the side walls (1,2), wherein both cross-members (7,8) are of circular segment-shaped cross-section and provided with mutually facing straight surfaces (9,10) which delimit a belt guide slot (11) the width (w) of which is substantially equal to twice the thickness (s) of a belt (5) to be connected.

4,641,876

COIL EDGE PROTECTING COIL LIFTER AND INSERT

David G. Kiser, Franklin; Donald M. Spaulding, Cochranton, both of Pa., and Peter J. Wassmer, Bay Village, Ohio, assignors to Zurex Corporation, Cochranton, Pa.

Filed Jul. 29, 1985, Ser. No. 759,686
Int. Cl.[4] B66C *1/42*
U.S. Cl. 294—86.4 **13 Claims**



1. A coil lifter adapted to lift a coil having a coil core, said lifter comprising:

an upper housing adapted to be suspended over a coil of material;

a pair of spaced lifter arms connected to and extending downwardly from said housing, each of said lifter arms having a front wall opposed to each other and a lifting surface at a lower end of each arm adapted to fit within a coil core;

means for effecting movement of said arms relative to each other to open and close said arms about a coil; and means at said front wall of each arm for contacting the edges of a coil located between the front walls of said lifter arms, each of said contact means being movable along with the edges of a coil relative to the lifter arm on which the contact means is mounted,

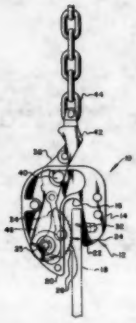
whereby forces exerted on the edges of a coil as said front walls of said lifter arms are moved along said coil edges are minimized to minimize damage to the coil edges.

4,641,877

LIFTING CLAMP CAM WEAR INDICATOR AND METHOD

George O. Merrill, Forest Hills, N.Y., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 18, 1985, Ser. No. 777,392
Int. Cl.[4] B66C *1/48;* G01D *21/00*
U.S. Cl. 294—101 **8 Claims**



1. In a lifting clamp for lifting metal plate or the like, a clamp housing including means forming a "u" shaped recess for receiving a portion of the metal plate or the like, a plate gripping cam pivotally mounted on said clamp housing for movement into gripping engagement with the metal plate or the like for securing the metal plate or the like to said clamp housing between said plate gripping cam and one side of said "u" shaped recess, said plate gripping cam including a plurality of spaced apart plate gripping teeth arranged along an arcuate rim with respect to an axis of rotation of said plate gripping cam, said spaced apart plate gripping teeth including a crested edge extending generally in a plane parallel to said axis of rotation of said plate gripping cam and at least one of said crested spaced apart plate gripping teeth having a slot in said crested edge which may be viewed from the exterior of the lifting clamp when a plate member is not disposed in said "u" shaped recess, said slot providing a means for indicating wear, whereby when said tooth having a crested edge in a slot is used to a degree such that said crested edge is worn away, the depth of said slot in said crested edge tooth will be reduced or will disappear thereby indicating to the observer the degree of wear on said crested edge tooth.

4,641,878

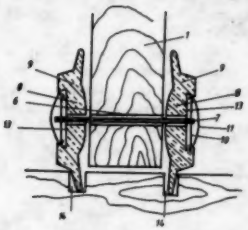
TOY RAILWAY VEHICLE SET WITH CONSTRICTED OPENING RECESS IN HUB

Nils A. I. Petersson, Killeberg, Sweden, assignor to 501 Brio AB, Osby, Sweden

Filed Sep. 18, 1985, Ser. No. 777,254
Claims priority, application Sweden, Sep. 27, 1984, 8404834
Int. Cl.[4] B60B *7/04, 3/14, 27/06, 37/10*
U.S. Cl. 295—49 **1 Claim**

1. A wheel set for toy rail vehicles having downwardly directed wheel support members having a bore therethrough, a pair of support wheels, a hub on said wheel and rim means extending radially from said hubs and being engageable with a guide tract for the wheel, each hub having a bore therethrough, an axle for said support wheels and being of a diameter less than the bore in said support members, a spring disc anchor means for each wheel having a struck out central star portion the diameter of which is less than the diameter of said axle to form a lock with said axle to prohibit axial withdrawal of the support wheels from said axle once the spring disc anchor means has been set on each wheel on opposite sides of said wheel support means, in each said hub an undercut wall

larger at its inner end and tapered to a smaller opening at its outer end defining a constricted opening recess for housing and retaining said spring disc anchor means and a cover locked



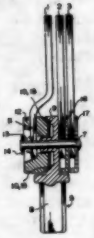
within the wheel hub to retain the wheel axially secured to the axle and the cover all of which are substantially secured against axial displacement from within said constricted opening recess.

4,641,879

BABY CARRIAGE HOOD

Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

Filed Dec. 2, 1985, Ser. No. 803,498
Claims priority, application Japan, Dec. 12, 1984, 59-261970
Int. Cl.[4] B60J *9/00*
U.S. Cl. 296—78 A 6 Claims



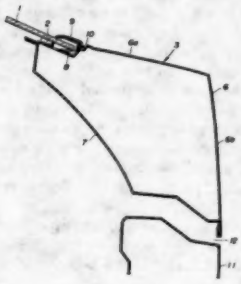
1. A baby carriage hood comprising:
a support member for mounting said hood on a baby carriage body,
a shaft member extending through said support member,
at least two ribs whose ends are bunched in the manner of the pivot of a fan by said shaft member extending therethrough,
a bracket assembled to said support member so that it is movable axially and turnable circumferentially relative to said shaft member, and
a spring member for resiliently urging said bracket toward said support member,
the respective opposed surfaces of said bracket and support member being formed at their assembled region with uneven-surfaced portions adapted for removable engagement with each other,
one of said ribs being fixed to said bracket.

4,641,880

REAR DOOR STRUCTURE FOR MOTOR VEHICLES

Tsuyoshi Ohkubo, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1986, Ser. No. 830,643
Claims priority, application Japan, Feb. 18, 1985, 60-21630
Int. Cl.[4] B60J *5/10*
U.S. Cl. 296—154 6 Claims



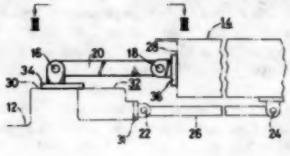
1. A rear door structure in a motor vehicle having a vehicle body, comprising:
a pane of glass having a pair of side edges curved downwardly; and
a frame supporting said pane of glass in surrounding relation to an outer peripheral edge thereof, said frame including a front frame member pivotally mounted on said vehicle body, a rear frame member supporting a rear edge of said pane of glass and having a first channel for receiving water flowing from an outer surface of the rear frame member when the rear door structure is opened, and a pair of side frame members supporting side edges of said pane of glass and each having a second channel communicaing with said first channel.

4,641,881

SIDE DOOR HINGE MECHANISM IN MOTOR VEHICLE

Kazuhiro Nomura, Anjyo, and Masayuki Nomura, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Oct. 3, 1984, Ser. No. 657,892
Claims priority, application Japan, Oct. 4, 1983, 58-153917[U]
Int. Cl.[4] B60J *5/04;* B62D *25/04;* E05D *15/28*
U.S. Cl. 296—202 2 Claims



1. A hinge mechanism for a vehicle door comprising:
a vehicle body including means extending vertically along said vehicle body for mounting the door to said vehicle body, the door having an end surface extending between an exterior and an interior of the door proximate said mounting means, said end surface having a lower vertical section measuring a predetermined length and an upper inclined section, said mounting means having a first mounting surface aligned with said vertical section and a second mounting surface, said mounting means including

a pillar member extending vertically along said vehicle body, said first mounting surface being positioned along an outer side of said pillar member and said second mounting surface being located on said pillar member rearward of said first mounting surface;

support means extending between said vertical section and said first mounting surface for providing primary support for the door, said support means including a support arm and first pivot means for pivotally connecting said support arm to said first mounting surface and to said end surface, wherein said first pivot means includes first shaft means for pivotally mounting said support arm on said first mounting surface and second shaft means for pivotally mounting the door along said end surface to a portion of said support arm opposite said first shaft means; and

control means extending between the door and said second mounting surface for guiding the door when the door is opened and closed, said control means including a control arm and second pivot means for pivotally connecting said control arm to said second mounting surface and to the door to enable said control arm to pivot with said support arm, when said door is opened and closed, the vertical dimension of said control arm being small relative to said support arm.

4,641,882

ORTHOPEDIC APPLIANCE

John Young, 216 Crystal Lake Rd., Algonquin, McHenry County, Ill. 60102

Filed May 6, 1981, Ser. No. 260,905

Int. Cl.[4] A47C *4/52*

U.S. Cl. 297—183 **11 Claims**

1. An orthopedic appliance assembly adapted to support the body of an injured or handicapped person without the use of his arms and hands and adapted to be readily movable with the person, said assembly comprising, in combination, a principal frame assembly having a lower portion adapted to engage and rest upon a travelled surface in position of use, a seat assembly disposed at the other end of said frame and forming body support means for said person, at least one handle extending radially outwardly from said frame and spaced downwardly apart from said seat assembly, said handle having a gripping portion being positioned relative to said frame so as to be able to be grasped by said person so as to exert a lifting force on said appliance while said person is supported by said seat, said handle including means preventing movement of said gripping portion thereof above the level of said seat.

4,641,883

FOLDABLE SUPPORT

Teruyuki Kato, Funabashi, Japan, assignor to K.K. Iwai, Tokyo, Japan

Filed Apr. 15, 1985, Ser. No. 723,076

Int. Cl.[4] A47C *7/66, 16/00*

U.S. Cl. 297—184 **7 Claims**

1. A foldable support comprising:

a first frame member having an upper and a lower end and a pair of inwardly projecting portions between such ends;

a second frame member having an upper and a lower end and a pair of outwardly projecting stepped portions between such ends, the first and second frame members being attached to each other so that each of the inwardly projecting stepped portions of the first frame member cooperates with one of the outwardly projecting stepped portions of the second frame member, the first and second frame members being rotatable relative to each other about an axis passing through the inwardly and outwardly projecting stepped portions;

a belt extending between the upper ends of the first and second frame members;

a supporting lever having two ends and rotatably mounted at one end to one of the frame members;

a third frame member fixed to the other end of the lever, the third frame member having a belt extending between said ends of said third frame member, whereby upon unfolding and erecting said support, said third frame member lies above said first and said second frame members; and a T-shaped joint member connecting the other end of the lever and the third frame member and having means to swivel the third frame about perpendicular horizontal axes.

4,641,884

SEAT FOR VEHICLES

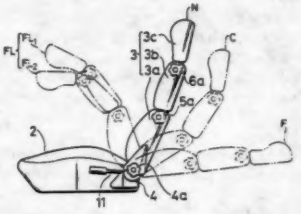
Norio Miyashita, Tokyo, and Akira Nemoto, Akishima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Tachikawa Spring Co. Ltd., both of Tokyo, Japan

Filed Feb. 20, 1986, Ser. No. 831,272

Claims priority, application Japan, Feb. 21, 1985, 60-33326

Int. Cl.[4] A47C *3/00*

U.S. Cl. 297—284 **20 Claims**



1. A seat for vehicles in which a seat back is separated into a plurality of portions in the vertical direction and a reclinable angle of each of said plurality of separated portions can be varied, comprising:

(a) reclining means provided in connection with the lowest

portion of said separated portions and a cushion of said seat for adjusting a reclinable angle of said lowest portion relative to said cushion of said seat;

(b) a plurality of angle adjusting means each provided in connection with adjacent ones of said separated portions for adjusting an angle of an upper portion of said adjacent ones relative to a lower portion thereof;

(c) fine adjusting means provided in connection with each of said plurality of angle adjusting means for finely adjusting the angle of said upper portion; and

(d) means for coupling each of said plurality of angle adjusting means to said reclining means to thereby operate said plurality of angle adjusting means in response to each operation of said reclining means, whereby said separated portions can be varied to various reclinable postures and said reclined postures of said separated portions can be adjusted finely.

4,641,885

WORK CHAIR HAVING A VERTICALLY ADJUSTABLE CHAIR SUPPORT

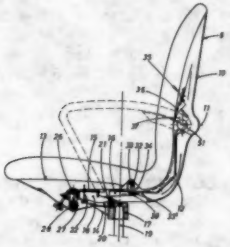
Egon Bräuning, Weil am Rhein, Fed. Rep. of Germany, assignor to Protoned B.V., Amsterdam, Netherlands

Filed Jun. 27, 1984, Ser. No. 624,979

Claims priority, application Switzerland, Jul. 20, 1983, 3973/83

Int. Cl.[4] A47C *3/00*

U.S. Cl. 297—300 **9 Claims**



1. A work chair having a vertically adjustable chair support (19) rigidly joined to a chair support base bearer (14) on which an integrally formed chair shell (8) is suspended for longitudinal movement by means of a front and rear spring-loaded pair of lever members (27, 32) of an adjustable mechanism, the chair shell (8) being comprised of a seat shell portion (13), a lumbar portion and buttocks supporting portion (12) being rigidly joined with said seat shell portion (13), and a backrest portion (10) being joined with said lumbar portion and buttocks supporting portion (12) by means of a hinge joint (11), the backrest portion (10) of the chair shell (8) further being joined with a tension member arrangement (35–39) which, by the user of the chair pressing back with their shoulders, applies an adjusting force to the backrest portion (10) for the purpose of providing a change in inclination, thereby effecting a synonymous change in the inclination of the seat shell portion (13), the hinge joint further being characterized by an integrally formed flexible hinge portion (11) between the lumbar and buttocks supporting portion (12) and the backrest portion (10), the tension member arrangement (35–39) comprised of a flexible band (36) which moves upwardly when the backrest portion (10) is moved back thereby causing the band (36) to pull the base bearer (14) backwards further producing a flexible connection between the bottom end of the backrest portion (10) and the base bearer (14), which is slidably guided toward the base bearer (14) by means of a movement deflecting device (37) in the region of the hinge portion (11), and via a channel (38) in the lumbar portion and buttocks supporting (12), said movement deflecting device (37) having a curved bearing surface for said flexible band (36) passing into a u-shaped groove which is formed in the channel member (38), the channel member (38) and deflecting device (37) being attached to chair shell (8) in the portion (12) supporting the buttocks and lumbar regions.

4,641,886

GAS SPRING ARRANGEMENT, ESPECIALLY FOR A BACKREST SUPPORT FOR OFFICE CHAIRS

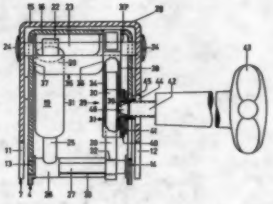
Elke Dauphin, Nuremberg, Fed. Rep. of Germany, assignor to Burositz Mobelfabrik Friedrich-W. Daupin GmbH & Co., Offenhausen bei Nürnberg, Fed. Rep. of Germany

Filed Sep. 9, 1985, Ser. No. 773,930

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1984, 3438843; Mar. 14, 1985, 3509049

Int. Cl.[4] A47C *1/027*

U.S. Cl. 297—300 **5 Claims**



1. A gas spring arrangement comprising a gas spring, disposed between two elements pivotable in relation to one another around a pivot axis, which damps the pivot movement, and a mechanical arrangement with an activating lever for the releasable adjustment of the pivot movement, especially for the inclination adjustment of the backrest of office chairs, characterized in that the gas spring is fastened between two transverse struts, which are each disposed on an element parallel to the pivot axis, and in that the mechanical adjustment means comprises a sheath part and a piston part longitudinally movable in the sheath part, in that the sheath part and the piston part are each connected with axial free play to one of the transverse struts and are disposed generally parallel to the gas spring, and in that the sheath part has a lateral threaded bore, into which a threaded bolt disposed at the front end of the activating lever can be screwed in such a way that the piston part can be braced against the sheath part, and a spring is disposed on the transvere strut supporting the sheath part, said spring acting on said sheath part parallel to the pivot axis.

4,641,887

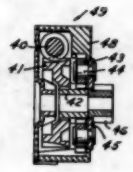
PLANETARY SEAT BACK ADJUSTER

Bernd A. Klueting, Jung-Stilling-Weg, Fed. Rep. of Germany, assignor to Keiper Recaro Incorporated, Battle Creek, Mich.

Filed Sep. 16, 1985, Ser. No. 776,659

Int. Cl.[4] A47C *1/025*

U.S. Cl. 297—362 **4 Claims**



1. Seat back adjuster comprising pivotally connected seat and seat back hinge members, planetary gear means for adjust-

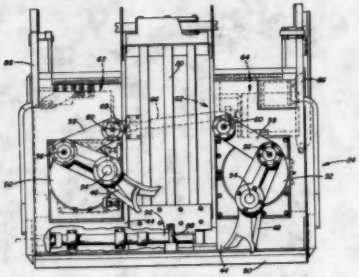
ing the relative position of said hinge members, said means including a simple planetary speed reduction gear output set comprising sun input, planetary gear carrier output, and fixed ring gear elements, and speed reduction motor driven worm and worm wheel input means drivingly connected with the sun of said output set to provide a multiplied compound overall reduction ratio.

4,641,888

MATERIAL GATHERING DEVICE FOR A MINING MACHINE

Maurice K. LeBegue, Argillite, and Henry E. Wilson, Ashland, both of Ky., assignors to National Mine Service Company, Pittsburgh, Pa.

Filed Apr. 12, 1985, Ser. No. 722,700
Int. Cl.[4] E21C *35/20*
U.S. Cl. 299—64 **4 Claims**



1. An improved material gathering device for a mining machine of the type which includes a mobile body supporting a mining head at the forward end thereof for dislodging material from a mine face, a gathering platform on said mobile body adjacent to and below said mining head, said gathering platform arranged to receive material dislodged by said mining head thereon, and endless conveyor extending longitudinally along said mobile body to convey said dislodged material away from said forward end to a rearward end of said mobile body, and a pair of oscillating arms on opposite sides of said gathering platform to feed said dislodged material onto said endless conveyor, said improvement comprising,

a drive motor for driving said pair of oscillating arms and for driving said endless conveyor,

a first transverse shaft drivingly connected to said pair of oscillating arms, a first gear drivingly connected to said first transverse shaft, said drive motor drivingly connected to said first gear,

said endless conveyor having a forward end extending onto said gathering platform and terminating near a forward edge thereof, and

a transversely extending conveyor drive shaft positioned parallel with said first shaft and forwardly thereof, said conveyor drive shaft drivingly connected to said first gear.

4,641,889

CUTTING MACHINE

Erich Brandl, Knittelfeld, Austria, assignor to Voest-Alpine Aktiengesellschaft, Muldenstrasse, Austria

Filed Sep. 6, 1985, Ser. No. 773,364
Claims priority, application Austria, Sep. 20, 1984, 2997/84
Int. Cl.[4] F21C *27/24*
U.S. Cl. 299—75 **6 Claims**

1. A cutting machine comprising:

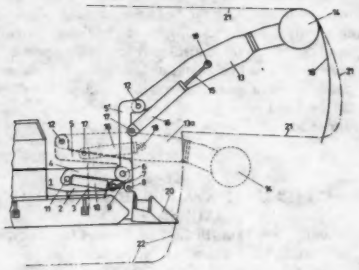
a frame;

a cutting tool;

a cutting arm being swivellable around a first horizontal swivelling axis and a vertical axis and carrying the cutting tool on a free end, said first horizontal swivelling axis being displaceable relative to the frame;

a rocker arm connected at one end to the frame and connected at an opposite end at the first horizontal swivelling axis of the cutting arm;

said rocker arm being turnable around the vertical axis and being swivellable around a second horizontal swivelling axis through said one end of the rocker arm;



wherein said rocker arm in a lowered position is so arranged that the second horizontal swivelling axis is located relative to the frame in front of the first horizontal swivelling axis;

said rocker arm further being swivellable around the second horizontal swivelling axis from a backwardly directed and approximately horizontal position into an upwardly directed and approximately vertical position; and

drive means, supported on the rocker arm, for swivelling the cutting arm around the first horizontal swivelling axis.

4,641,890

WHEEL COVER FOR A VEHICLE

Takao Ookubo, Yokohama; Yuko Baba, Tokyo, and Kiyoshi Kamihama, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd. and Hashimoto Forming Kogyo Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 605,992, May 2, 1984, abandoned, which is a continuation of Ser. No. 402,567, Jul. 25, 1982, abandoned, which is a continuation of Ser. No. 155,927, Jun. 3, 1980, abandoned. This application Feb. 22, 1985, Ser. No. 703,469
Claims priority, application Japan, Jun. 4, 1979, 54-68844
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.[4] B60B *7/00*
U.S. Cl. 301—37 SS **21 Claims**

3. A wheel cover for a vehicle wheel, comprising:

a one-piece member integrally molded in a mold having a parting surface, said member comprising an annular radially outer portion, a radially inner portion having a circular outer counter and a plurality of spoke portions each having a solid cross-section and extending between and connected to said radially outer and radially inner portions, each spoke portion crossing with another spoke portion at a cross point between said radially outer and radially inner portions and each two crossing spoke portions being staggered at said cross point in the axial direction of said wheel cover, each spoke portion having a front section on an outer surface side and a rear section on an inner surface side, with the front section of the spoke portion lying in front at said cross point being thicker than the front section of the spoke portion lying behind at said cross point, boundary lines between said front and rear sections of each two crossing spoke portions being defined by the parting surface of the mold in which said member is molded and lying substantially in a common plane; and

means for attaching said wheel cover to a vehicle wheel.

4,641,891

HYDRAULIC SERVO VEHICLE BRAKE

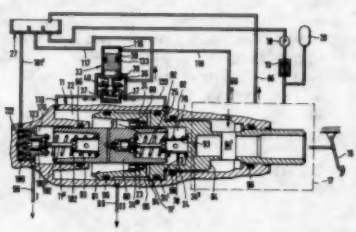
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 20, 1985, Ser. No. 747,021

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3423030

Int. Cl.[4] B60T *8/02, 11/16, 13/12*

U.S. Cl. 303—10 **7 Claims**



1. A hydraulic servo vehicle brake with a pedal-actuated tandem master cylinder having two master pistons, with wheel cylinders linked to it through at least one brake circuit, and with a brake application valve which is arranged between the pedal and a first master piston and which, on actuation by the brake pedal, applies pressure medium supplied by a hydraulic pump connected with a fluid reservoir in a controlled manner to the first master piston and directly to said brake circuit to furnish a controlled pressure, wherein said first master piston (24) is provided with a cylindrical axial bore (78) toward the piston pressure chamber (76) within which axial bore (78) a second master piston (80) extending to a bottom (79) of the master cylinder is tightly slidably arranged, a non-return valve (23) arranged as a sealing cup is provided between the second master piston (80) and the annular portion (24''') of a piston (24) wherein an annular chamber (22) existing between that portion of said second master piston (80) which projects from the said axial bore (78) and said master cylinder (11) is lined with a three-position two-way valve (33) having an inlet (37) and an outlet (36) and being controlled by the controlled pressure by way of a control inlet (116), and which with no application of controlled pressure links said annular chamber (22) to said fluid reservoir (27) and which interrupts that link in the presence of a slight first controlled pressure on the order of approximately 1 bar, and wherein the interrupted condition is maintained until application of brake shoes of said vehicle brake takes places as long as the controlled pressure is still relatively low in the amount of up to approximately 7 bar, and which again opens in response to increased second controlled pressure when the increased pressure exceeds approximately 7 bar.

4,641,892

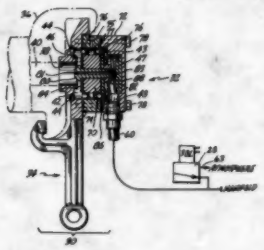
RAILWAY EMERGENCY BRAKE SYSTEM

Hartmut Schmid, North Vancouver, Canada, assignor to DSL Dynamic Sciences Limited, St. Laurent, Canada

Filed Dec. 12, 1984, Ser. No. 680,769

Int. Cl.[4] B60T *15/42, 15/46*

U.S. Cl. 303—47 **17 Claims**



1. An emergency brake control valve for a railway vehicle, said valve comprising:

a glad-hand body having an exterior face and an interior face that are opposed to one another, said exterior face being configured for mating connection with a glad-hand connection to the brake pipe of a railway vehicle, said glad-hand body including a passageway that extends between said faces, said passageway communicating with said brake pipe when said glad-hand body is connected to said glad-hand connection, said glad-hand body having a primary valve seat on the interior face thereof adjacent said passageway, said glad-hand body having an exhaust port that extends between said faces; and

a quick-exhaust valve mounted on the interior face of said glad-hand body, said quick-exhaust valve having a movable valve member having a primary side and a secondary side that are opposed to one another, in a closed position said primary side being seated against said primary valve seat to close the passageway of said glad-hand body and thereby prevent communication between said passageway and atmosphere, in an open position said primary side being unseated from said primary valve seat to establish a fluid path to atmosphere from said passageway through said exhaust port, said valve member normally occupying the closed position and being movable to the open position in response to a difference between a pressure acting on said primary side and a pressure acting on said secondary side.

4,641,893

HYDRAULIC BRAKING PRESSURE CONTROL APPARATUS FOR VEHICLES

Makoto Sato, Kamifukuoka, and Shohei Matsuda, Utsunomiya, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1985, Ser. No. 753,484

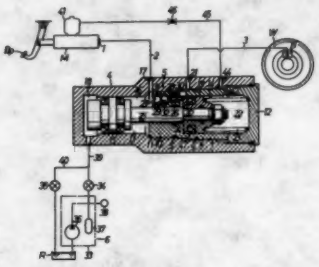
Claims priority, application Japan, Jul. 17, 1984, 59-148234

Int. Cl.[4] B60T *8/02*

U.S. Cl. 303—113 **2 Claims**

1. A hydraulic braking pressure control apparatus for vehicles, having an input hydraulic chamber communicating with an output port of a master cylinder, and an output hydraulic chamber communicating with a wheel brake, said output hydraulic chamber being adapted to generate a hydraulic braking pressure in accordance with a hydraulic pressure inducted into said input hydraulic chamber, said output hydraulic chamber

being constructed to be enlarged in volume, when a wheel is about to be locked, in accordance with a hydraulic control pressure supplied from an anti-lock control means to a control chamber, said apparatus comprising a casing in which first and second cylinder portions are provided concentrically with a partition interposed therebetween; a first piston fitted slidably in said first cylinder portion to define said input hydraulic chamber on one side of the piston near said partition and said control chamber on an opposite side thereof far away from said partition; a second piston fitted slidably in said second cylinder portion to define said output hydraulic chamber on one side of said second piston near said partition and a spring chamber on an opposite side thereof far away from said partition; a piston



rod penetrating through said partition in an oil-tightly slidable manner and having said first and second pistons mounted fixedly on both end portions thereof; a valve mechanism provided in said partition and adapted to be closed in accordance with a displacement of said second piston away from said partition; wherein said spring chamber is in communication with a reservoir provided in said master cylinder and houses therein a spring for urging said second piston toward said partition and wherein a sealing structure is provided for sealing between said output hydraulic chamber and said spring chamber but allowing flow of a working oil from said spring chamber to said output hydraulic chamber through said sealing structure.

4,641,894

BRAKE SYSTEM

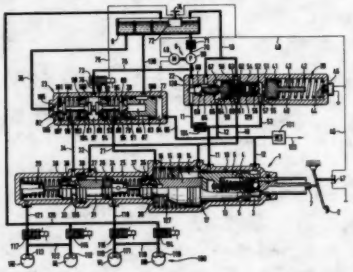
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 19, 1985, Ser. No. 756,740

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1984, 3427070

Int. Cl.[4] B60T *8/44*; F15B *7/00*

U.S. Cl. 303—114 **9 Claims**



1. A brake system for automotive vehicles, which is provided with a master brake cylinder and with a working piston confining a working chamber and communicating with at least one pressure chamber of a wheel brake and which is provided with a power booster connected upstream of the master brake cylinder and connected to an auxiliary energy source for the purpose of pressure supply, wherein valve means (**22**, **23**) are connected at a booster chamber (**3**) which are controllable by the pressure of the booster chamber (**3**) and by means of which a pressure medium connection is established from the auxiliary energy source (**8**) to at least one working chamber (**25**) of the master brake cylinder (**24**), at the same time an annular surface (**127**) of the working piston (**19**) is pressurized in the brake's release direction, wherein the valve means comprise a first valve arrangement and a second valve arrangement (**22** and **23**), the first valve arrangement (**22**) comprising an arrangement controlling the pressure of the auxiliary energy source (**8**) and the second valve arrangement (**23**) comprising a valve (**80**) opening in the dependence on the pressure of the auxiliary energy source (**8**), and, wherein the first valve arrangement (**22**) has a control chamber (**64**) communicating with a prepressure chamber (**13**) and confined by a control piston (**59**) on the one side and by a valve piston (**65**) on the other side, the control piston (**59**) being caused by a spring (**62**) acting in the direction of the valve piston (**65**) to rest at the valve piston (**65**) and the valve piston (**65**) blocking the connection from the auxiliary energy source (**8**) to a compensation reservoir (**9**) by way of a valve member (**69**) and releasing the same, when the force required for closing the valve member (**69**) and acting on the valve piston (**65**) is smaller than the force required for opening the valve member (**69**).

4,641,895

BRAKE SYSTEM WITH SLIP CONTROL FOR AUTOMOTIVE VEHICLES

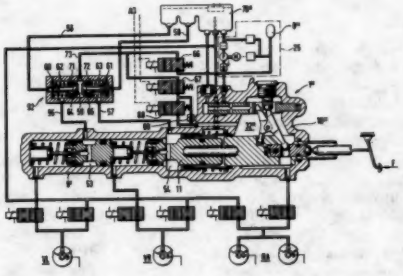
Juan Belart, Walldorf; Jochen Burgdorf, Offenbach-Rumpenheim; Hans W. Bleckmann, Obermoerlen; Lutz Weise, Mainz, and Wolfram Seibert, Darmstadt, all of Fed. Rep. of Germany, assignors to ITT Industries Inc., New York, N.Y.

Filed Oct. 15, 1984, Ser. No. 660,913

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 3338826; Oct. 27, 1983, 3347752

Int. Cl.[4] B60T *8/02*

U.S. Cl. 303—119 **1 Claim**



1. A brake system with slip control for an automotive vehicle having a plurality of wheel brake cylinders associated with the driven wheels of the vehicle, said system comprising, in combination:

a pedal-actuated braking pressure generator including a master cylinder;

a plurality of pressure fluid lines respectively connecting each of said wheel brake cylinders with said master cylinder;

an auxiliary energy source connected to said master cylinder by way of at least one multiple-way valve;

a plurality of wheel sensors respectively coupled to each of said driven wheels for providing electrical signals indicative of wheel rotational behavior;

means coupled to said sensors for providing an output signal indicative of a predetermined wheel rotational behavior;

means responsive to said output signal for controlling said multiple-way valve, wherein braking pressure is made available at said wheel brake cylinder associated with said driven wheels independently of the actuation of said pedal-actuated braking pressure generator; and,

wherein said master cylinder is a two-chamber tandem master cylinder which is connected to a pressure supply reservoir (70'') by way of a double valve assembly (52) and said double valve assembly (52) being further connected to said auxiliary energy source through said multiple-way valve wherein said auxiliary energy source communicates with the chambers of said two-chamber tandem master cylinder in response to said output signal said double valve assembly (52) being connected to said two-chamber tandem master cylinder by way of first and second pressure fluid lines which are separated from one another, said double valve assembly (52) having first and second valve pistons respectively disposed in said first and second pressure fluid lines each piston being resiliently urged against a valve seat in a control chamber (59) of said double valve assembly (52), said control chamber (59) being connected to said multiple way valve whereby introduction of pressure into said control chamber (59) translates said pistons away from said valve seats thereby connecting said auxiliary energy source to said two-chamber tandem master cylinder.

4,641,896

RETRACTABLE DOOR STRUCTURE

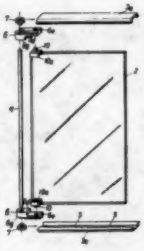
Kyosuke Iimura, 1-2-13 Higashi Tabata, Kita-ku, Tokyo, and Kiyoshi Maruyama, 716 Kamitsuchidana, Ayase-shi, Kanagawa, both of Japan

Continuation of Ser. No. 675,821, Nov. 28, 1984, abandoned. This application May 28, 1986, Ser. No. 869,460

Claims priority, application Japan, Dec. 26, 1983, 58-198613[U]

Int. Cl.[4] E06B *00/00*

U.S. Cl. 312—110 **4 Claims**



1. A retractable door structure for storage cases with a door which comes out of the storage case and rotates to open and close, the structure comprising:

a pair of opposing guide grooves provided inwardly from the front of the case;

a pair of elongated sliding blocks with one of said sliding blocks provided in each of the sliding grooves, each of said elongated sliding blocks having a scraped portion, said scraped portions opposingly facing each other;

a storing space provided in each of said elongated sliding blocks in a side of said sliding blocks opposing a bottom of each of said grooves;

a pinion mounted in said storage space in each of the sliding blocks;

a single rack provided on one side wall of each of the grooves, each of said racks engaging with one of said pinions;

a connecting rod provided between the sliding block and extending into each of said storing spaces wherein the pinions are fixed to both ends of the connecting rod and rotate together with said connecting rod; and

a door rotatably mounted between the scraped portions of the sliding blocks by rotary shafts attached to the door such that said rotary shafts and said sliding blocks support the weight of said door.

4,641,897

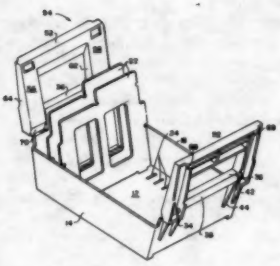
PORTABLE HANGING FILE AND DESK TOP DISPLAY FOR FLOPPY DISKS

Jerry M. Long, Pleasanton, and James A. Womack, Los Gatos, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.

Filed May 18, 1984, Ser. No. 611,903

Int. Cl.[4] A47B *63/00*; B42F *17/00*

U.S. Cl. 312—183 **5 Claims**



1. A storage and display device for substantially flat, rectangular elements such as floppy disks and the like, comprising:

tray means for supporting said elements on an edge thereof and including a bottom, a pair of oppositely disposed end walls which incline outwardly and extend upwardly a predetermined distance from the bottom of said tray, and a pair of sidewalls extending upwardly from said bottom a second predetermined distance which is less than said first predetermined distance;

separator means for separating quantities of said elements stored in said tray;

aligment means formed in said bottom for positioing said separator means;

means for suspending said tray beneath a pair of parallel extending supports and including a pair of hanger means each having one end adapted for attachment to one of said supports and another end pivotally attached to an upper portion of one of said end walls, said hanger means being configured such that they are rotatable between a first position lying substantially parallel to and coextensive with said end walls, and a second position wherein said one ends are located substantially higher than the upper extremeties of said end walls, said hanger means includes: a first portion having an inclined surface extending a full width of said first portion; a pair of finger member extending parallel to each other and away from said inclined surface, each said finger member having a terminal end and a flat face portion extending over most of its length, and inner and outer side walls that intersect said inclined surface; an aperture formed in each said inner side wall for accomodating pivotal attachment with said pintels; and a pair of tabs formed along an edge of said inclined surface and spaced from the edges of said inner and outer side walls to form a channel with said hanger may be mounted to a rod or similar support.

4,641,898

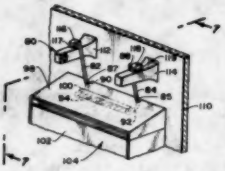
SUPPORTING BRACKET FOR A FEMININE HYGIENE CABINET

Michael D. Horowitz, and Robin M. Horowitz, both of 996 Calle Ruiz, Thousand Oaks, Calif. 91360

Continuation-in-part of Ser. No. 597,499, Apr. 6, 1984, abandoned. This application Sep. 26, 1985, Ser. No. 842,811

Int. Cl.[4] A47B *67/02, 81/00*

U.S. Cl. 312—209 **7 Claims**



1. In combination with a toilet paper wall dispenser comprising a wall mounted bifurcated bracket having a pair of laterally extending spaced-apart wall members, a toilet paper roll supporting rod mounted on and extending between said wall members, each said wall member including hiatus means for facilitating connection with and support of an end of said rod, said rod being readily removable from said leg members, the improvement comprising:

a feminine hygiene cabinet separated into compartments adapted to contain numerous conventionally available different feminine hygiene products, said cabinet having side walls which connect a front wall and a back wall and also connect a top and a bottom, access into said compartments being through said front wall, said top including connection means; and

a mounting bracket, said mounting bracket including a pair of upstanding legs, each said leg including engaging means, each said engaging means pivotally connecting with a support member with therebeing a separate said support member for each said leg, said engaging means being spaced from said hiatus means, one said support member being fixedly mounted on one said wall member and the other said support member being fixedly mounted on the other said wall member, said mounting bracket including a main member connecting together said upstanding legs, said main member connected to said connection means providing the sole support for said cabinet on said mounting bracket.

4,641,899

MULTI-PART ELECTRICAL CONNECTOR ASSEMBLY

David O. Gallusser, Oneonta, and Stephen Punako, Bainbridge, both of N.Y., assignors to Allied Corp., Morristown, N.J.

Filed Jul. 18, 1985, Ser. No. 757,826

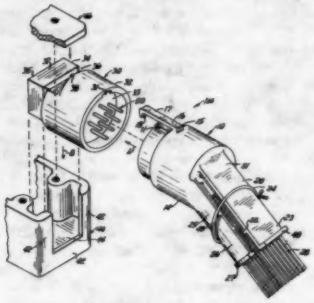
Int. Cl.[4] H01R *11/00*

U.S. Cl. 339—59 M **6 Claims**

1. A connector assembly comprising a first and a second connector member each having a forward end portion configured for mating with one another along a first axial direction and a rearward end portion, orienting means for orienting said forward end portions, and latching means for releasably latching the mated forward end portions together, the rearward end portion of said first connector member receiving a plurality of insulated electrical cables each terminated to a respective electrical terminal disposed therein and including support means for supporting the cables, characterized by

the rearward end portion of the second connector member being configured for interlocking mating within an opening of a connector receptacle only at selected angular positions of the second connector member relative to the opening and along a second axial direction defined by a plane substantially perpendicular to the first axial direction,

said support means including a cable tie, a relatively rigid, inflexible semi-cylindrical support beam and a relatively flexible planar cover beam, and means for positioning the cable tie about the beams, each beam having, respectively,



a first end integrally secured to said first connector member, a second end, and a rib for gripping the cables, the support beam extending at an acute angle to the first axial direction and the second end of the cover beam being adapted to deflect downwardly about the second end of the support beam to form a closure about the cables about which the cable tie is tied whereby to captivate the cables.

4,641,900

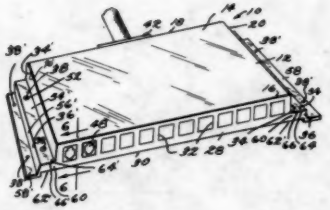
TELEPHONE DISTRIBUTION APPARATUS

Leonard A. Japngie, Howell, N.J., assignor to Telnetix, Inc., Silver Spring, Md.

Filed Feb. 20, 1986, Ser. No. 831,178

Int. Cl.[4] H01R *9/09, 25/00*

U.S. Cl. 339—17 LC **8 Claims**



1. A telephone distribution apparatus comprising:

a housing defining a flat rectangular, top member having front, rear and side edges; a rear wall member projecting downwardly from said rear edge and defining a lower edge parallel to said rear edge and an inverted channel-shaped opening in communication with said lower edge; a front wall member projecting downwardly from said front edge and defining a lower edge parallel to said front edge and a plurality of jack-receiving openings; first and second side wall members projecting downwardly from respective of said side edges and connecting together said front and rear wall members; and first and second step-shaped elements projecting outwardly from respective of said side wall members, each of said step-shaped elements defining a plurality of fastener-receiving openings;

a printed circuit board defining a plurality of electrically conductive elements in predetermined configurations, said board attached to said step-shaped elements and substantially parallel to said top member;

a multi-position electrical plug attached to said board and in electrical circuit relationship with said conductive elements, said plug positioned within said inverted channel-shaped opening; and

a plurality of jacks attached to said board and in electrical circuit relationship with said conductive elements, said jacks respectively positioned within said jack-receiving openings.

4,641,901

PRINTED CIRCUIT BOARD JACK FOR MODULAR PLUG CONNECTOR TERMINATED CORD

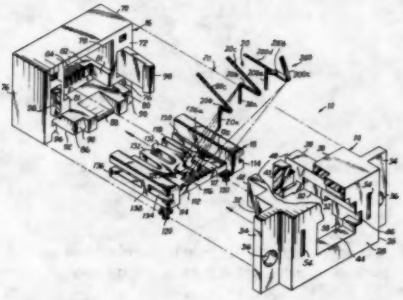
Robert J. Brennan, Ossining; Terrence Meighen, Stormville, and Walter M. Phillipson, Woodside, all of N.Y., assignors to Stewart Stamping Corp., Yonkers, N.Y.

Continuation-in-part of Ser. No. 570,806, Jan. 16, 1984, Pat. No. 4,537,459. This application May 21, 1984, Ser. No. 612,722

The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.

Int. Cl.[4] H01R *13/658*

U.S. Cl. 339—14 R **17 Claims**



17. A jack for a modular plug connector which terminates a cord constituted by a plurality of insulated conductors surrounded by a sheath of conductive material constituting a shield for suppressing radiation of electromagnetic and radio frequency interference-causing signals from and to the conductors, the modular plug connector including a dielectric housing having a cord-receiving aperture communicating with an internal cord-receiving cavity having a conductor-receiving portion in which the cord conductors are situated, a plurality of flat contact terminals having conductor engaging portions and contact edges, each flat contact terminal being situated in a respective slot in the housing aligned with a respective conductor with its engaging portion contacting said respective conductors to electrically engage the same and wherein the contact edges of the flat contact terminals are exposed at a common side wall of the housing, and shield terminating contact means electrically engaging said shield, the shield terminating contact means including an externally exposed portion situated at the exterior surface of at least one of the walls of the connector housing, the jack comprising:

a jack housing having a receptacle for the modular plug connector, an array of contacts mounted in said jack housing having portions situated within said connector receptacle adapted to be electrically engaged by contact edges of respective flat contact terminals upon insertion of the modular plug connector into said connector receptacle, at least a portion of said jack housing is formed of a material which attenuates electromagnetic and radio frequency interference-causing signals passing therethrough so that the jack housing constitutes an EMI/RFI shield for the modular plug connector, and wherein said jack housing portion is adapted to be electrically engaged by said externally exposed portion of said shield terminating contact means upon insertion of the modular plug connector into said connector receptacle.

4,641,902

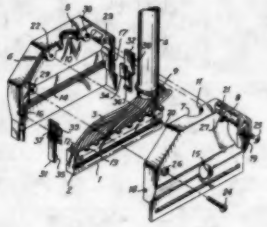
SHIELDED CONNECTOR WITH LATCHES

David F. Fusselman, Elizabethtown, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1985, Ser. No. 797,475

Int. Cl.[4] H01R *13/629*

U.S. Cl. 339—91 R **20 Claims**



1. A shielded connector for electrical circuits comprising:

a non-conductive housing containing electrically conductive terminals, said terminals being connectable to an electrically conductive cable,

an electrically conductive housing surrounding and sheilding said non-conductive housing, said electrically conductive housing comprising at least two elements, each of said elements being capable of mating with the other of said elements to form said electrically conductive housing and surround said non-electrically conductive housing;

an opening formed in said electrically conductive housing adapted for insertion of the electrically conductive cable;

at least one pocket formed in a sidewall of said electrically conductive housing, at least a portion of said pocket being formed in each element so that when said elements are mated to form the electrically conductive housing, said pocket will be completely enclosed, except for an aperture, within said sidewall between its inner and exterior surfaces, said aperture being located in the exterior surface of said sidewall,

at least one latch having a projection adapted to be inserted into the portion of the pocket formed by each element prior to mating so that after the elements are mated to form the electrically conductive housing, said projection will be located within the pocket and will act to retain the latch adjacent the external surface of the conductive housing sidewall, the latch also being adapted to mate said shielded connector with a second connector.

4,641,903

INSULATION DISPLACEMENT CONNECTOR

John W. Anhalt, Orange, and Michael K. Cabourne, Hacienda Heights, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,561

Int. Cl.[4] H01R *4/24*

U.S. Cl. 339—99 R **5 Claims**

1. An electrical connector for a plurality of generally parallel conductors comprising:

an insulator having a front and a rearwardly facing surface;

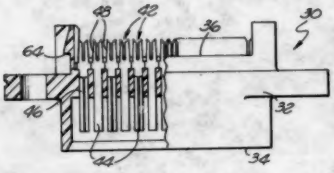
a row of contact cavities in said insulator extending from said front to said rearwardly facing surface, the center axes of said cavities lying in a common plane;

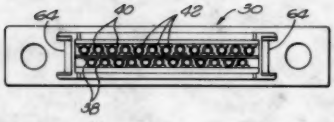
a contact mounted in each said cavity;

each said contact having a forward mating portion adjacent to said front of said insulator, a mounting portion located in the corresponding cavity, and a rear termination por-

tion extending outwardly from said rearwardly facing surface;

said termination portion of each said contact being bifurcated providing a pair of arms having opposed edges for engaging one of said conductors generally perpendicularly to said rows; and





adjacent contacts in said row of cavities having their termination portions disposed on opposite sides of said plane whereby said termination portions are staggered relative to each other for facilitating feeding of conductors laterally between said termination portions of said contacts.

4,641,904

FLAT CABLE CONNECTING SYSTEM

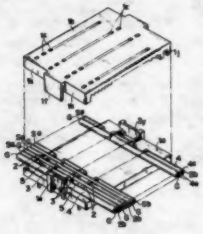
Motoki Kosugi, and Hidetaka Nakano, both of Tokyo, Japan, assignors to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 620,075

Claims priority, application Japan, Nov. 9, 1983, 58-210579; Jun. 18, 1984, 58-109699

Int. Cl.[4] H01R *11/20*

U.S. Cl. 339—99 R **14 Claims**



1. A flat cable connecting system comprising:

a multiple conductor flat cable having a plurality of side by side conductors spaced laterally of the cable and embedded in insulation, said cable having a plurality of openings in an area extending transversely across the cable intermediate the ends of the cable, each opening extending through the cable and completely severing at least one conductor for dividing said severed conductors into conductor segments extending in opposite directions along the cable from the opening; and

a connector cover on one face of said flat cable and a connector substrate opposed to said connector cover on the opposite face of said flat cable and connected to said cover and having contacts piercing the insulation of said cable and gripping and electrically connecting to the ends of said conductor segments on the opposite ends, relative to the length of said cable, of said openings, whereby the conductor segments can be connected in desired electrical lines across said openings.

4,641,905

CORDSET CLAMP SYSTEM

John M. Poliak, East Meadow, and Herbert Anker, Little Neck, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Oct. 3, 1985, Ser. No. 782,381

Int. Cl.[4] H01R *13/59*

U.S. Cl. 339—103 B **8 Claims**

1. A clamping system for holding an electrical cord to the wall plate of an electrical appliance, comprising, in combination,

said wall plate forming a generally circular aperture, a cylindrical body forming external threads and having an axis and a body diameter slightly smaller than the diameter of said aperture and forming an axial passage adapted to pass said cord, said body having opposed body inner and outer ends, said body being positioned in said aperture,

flange means connected to and extending radially outwardly from said body inner end,

arm means flexibly attached to said body outer end, said arm means being for gripping said cord, and

nut means having opposed inner and outer portions and forming a chamber adapted to contain said body and said arm means and further forming internal threads at said internal portion adapted to mate with said external threads of said body,

said nut means being mounted to said body so as to grip said wall plate between said nut means at said inner portion and said body at said flange means and being for pressing said arm means into gripping relationship with said cord at said outer portion.

4,641,906

SHIELDED ELECTRICAL CONNECTOR

Billy E. Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 666,517, Oct. 30, 1984, abandoned. This application Feb. 18, 1986, Ser. No. 830,904

Int. Cl.[4] H01R *4/66, 13/58*

U.S. Cl. 339—143 R **19 Claims**

6. A shielded electrical connector, comprising:

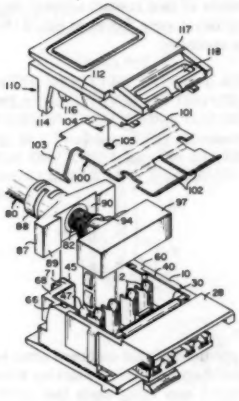
a terminal housing having a front mating face, a terminal support floor, sidewalls and a rearwall upstanding from said support floor, and a cable receiving portion in one of

said walls defined by a vertically extending opening therein and opposed flanges flanking the opening thereof;

a shield member disposed within said terminal housing, said shield member having side wall portions and a rear wall portion adjacent to the respective side walls and rear wall of said terminal housing, the shield member further comprising a pair of parallel flanges profiled to be received in said cable receiving opening adjacent to the opposed flanges, the shield flanges profiled to receive a shielding braid of a shielded cable therein;

a metal ferrule slidably receivable beneath the shielding braid of the cable, the ferrule profiled such that the shielding braid is received between the flanges of the shield member to create a compressive force between the flanges of the lower shield member and the shielding braid; and

an inserter member having means to receive the shielded cable therethrough, said receiving means opening into a profiled slot on a mating face of said inserter member, said profiled slot being receivable over the profiled flanges which flank the opposed flanges of said cable receiving opening and profiled to resist the outward deflection of said opposed flanges when the shielding braid and ferrule are forced between said shield flanges thereby maintaining the electrical contact force between the shielding braid and the shield flanges.



4,641,907

PLATED FILTERED CONNECTOR

Rickie M. Althouse, Harrisburg; Robert E. Beamenderfer, Palmyra; Roger Durbin, Lancaster; Robert D. Hollyday, Elizabethtown, and John P. Kling, Mt. Joy, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 562,633, Dec. 19, 1983, abandoned. This application Jun. 24, 1985, Ser. No. 747,699

Int. Cl.[4] H01R *13/658, 13/66*

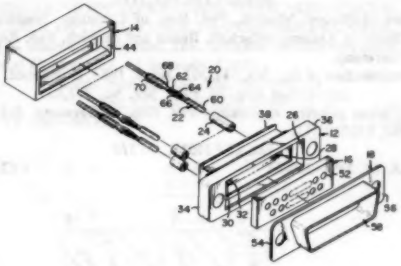
U.S. Cl. 339—147 R **16 Claims**

1. A solderless, filtered electrical connector comprising:

a first housing of insulative material defining a forwardly directed cavity and a plurality of passages opening into said cavity in a patterned array, each passage having at least two tines directed into said cavity forming an extension of the passage, conductive material plating the entire first housing,

a second housing of rigid insulative material defining a cavity, at least a portion of said first housing being received in said cavity of said second housing,

a like plurality of filtered terminals each comprising a tubular filter element having conductive outer and inner surfaces and an elongated terminal pin having a mating first end, a compliant filter receiving portion, filter locating shoulders, and a second oppositely directed second mating end, said filter element being mounted on said receiving portion with one end abutting said shoulders, said receiving portion engaging said inner conductive surface,



each said filtered terminal being mounted in a respective passage with said tines engaging said outer conductive surface.

4,641,908

RIGHT-ANGLED PLUG-TYPE CONNECTOR

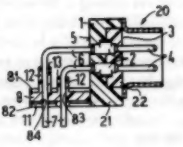
Karl Steffinger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 15, 1985, Ser. No. 691,623

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402902

Int. Cl.[4] H01R *13/502*

U.S. Cl. 339—206 R **4 Claims**



1. A right-angled plug-type connector having a plurality of contact elements which are fixed parallel to one another in a desired pattern, said connector comprising a plate-shaped retaining member being composed of insulating material and having a pair of spaced-apart projections extending from one side thereof, said projections having facing grooves, said retaining member having a plurality of through bores being arranged in a desired pattern; a plurality of contact elements being fixed in said pattern of through bores of the retaining member, each of said contact elements having a right-angled terminal portion extending from said one side of the retaining member; and a fixing plate of elastically yieldable material having a plurality of bores extending from a first side to a second side in the desired pattern, said fixing plate having a tubular extension for each of the bores of the fixing plate, each extension being integral with the fixing plate and extending from the first side thereof, said fixing plate being received between said projections the first side adjacent said one side and with the ends of the fixing plate in said grooves by flexing said plate in order to be inserted between said projections with a snap fit with the tubular extensions and bores of the fixing plate being arranged to extend perpendicular to the through bores of the retaining member and with the terminal portions of the contact elements being inserted through the tubular extensions and their associated bores in the fixing plate to form

prongs projecting from the second side of the fixing plate and at right angles to the through bores of the retaining member.

4,641,909

PLUG CONNECTOR

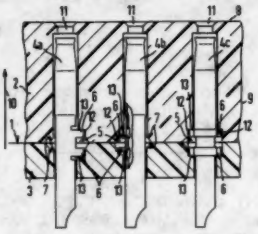
Karl Steffinger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 511,302, Jul. 6, 1983, abandoned. This application Aug. 28, 1985, Ser. No. 771,139

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 8220801[U]

Int. Cl.⁴ H01R *13/514*

U.S. Cl. 339—210 M **2 Claims**



1. In a plug-socket assembly having an insulated housing with a plurality of parallel bores therethrough, the housing being formed of two parts abutting one another along a parting line substantially normal to an axis of the bores with a plurality of cylindrically-shaped conductive members received in the insulated housing, one to a bore, the conductive members forming electrical contact plug-socket members with each of the conductive members having a diameter increasing projection received in a diameter increasing bore section effective to lock the conductive members axially in the bores, the improvement being the projections comprising at least two projections spaced axially along the conductive members separated by an air gap, the air gap having a dimension between the projections at least as great as the effective length of the projections in a direction normal to the bore axis and wherein the diameter increasing portion of the bore is configured with respect to the projections to provide wall surfaces for engagement by the projections preventing both axial and rotational movement of the conductive members and wherein the at least two projections of each of the conductive members being each formed by two tabs projecting therefrom, the tabs converging towards one another at free ends of the tabs, the tabs projecting from the conductive members tangentially from a curved periphery of said conductive members at right angles relative to the axis of the bores and extending in a plane parallel to the axis of the bores, the tabs being manufactured of flat stock in a stamping-rolling technique along with the formation of the conductive member, the conductive member being formed from flat stock in a stamping-rolling technique.

4,641,910

ELECTRICAL CONTACTS

John J. Rozmus, 1030 Derwydd La., Berwyn, Pa. 19312

Continuation-in-part of Ser. No. 553,161, Nov. 18, 1983, abandoned, which is a continuation of Ser. No. 295,748, Aug. 24, 1981, abandoned. This application Aug. 17, 1984, Ser. No. 641,674

Int. Cl.⁴ H01R *13/428*

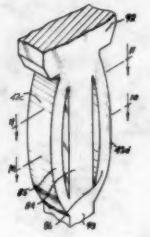
U.S. Cl. 339—221 R **3 Claims**

1. An electrical contact including a retention section extending along the axis of the contact, the retention section to be press-fitted into an aperture in contact support means to mount the contact on the support means, the retention section comprising:

three spaced apart, axially extending arms, there being an inboard arm and a pair of outboard arms respectively disposed on opposite sides of the inboard arm and each outboard arm being bowed outwardly;

each said outboard arm having an exterior convex operating surface to engage the wall of the aperture when the retention section is inserted therein;

said outboard arms being flexible whereby to flex toward said axis upon insertion of the retention section in said aperture and flex toward and away from said axis upon contraction and expansion of said aperture due to change in temperature of said contact support means, the flexing of the arms developing forces to retain the retention section in the aperture;



the relative positions of said outboard arms and said inboard arm and the magnitude of said flexing toward said axis of each outboard arm being such that each outboard arm engage said inboard arm so that it does not touch the other outboard arm and to prevent the metal of each outboard arm from being strained beyond the yield point thereof; and

said exterior convex operating surfaces being characterized by that in any radial plane normal to said axis and through the surfaces, the locus of each operating surface lies substantially in the circumference of a circle whose center lies in said axis and said inboard arm being configured so as to be spaced from the wall of said aperture when the retention section is inserted therein.

4,641,911

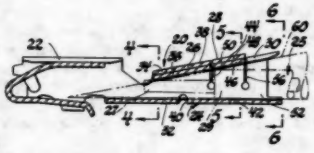
ELECTRICAL CONNECTOR HAVING A FUNNEL WRAP WIRE CRIMP BARREL

John J. Pavlak, Youngstown, and Charles R. Nestor, Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1984, Ser. No. 659,079

Int. Cl.⁴ H01R *4/18*

U.S. Cl. 339—276 T **5 Claims**



1. An electrical connector having attachment means for attaching the electrical connector to a conductor wire which comprise a wire crimp barrel and an insulation crimp barrel characterized in that:

the wire crimp barrel is funnel-shaped in the axial direction

to facilitate insertion of a conductor wire and accommodate a range of conductor wire diameters,

and partially overlapped inthe circumferential direction so that the funnel-shaped wire crimp barrel has an inner axial lip engaging an inner surface of an outer axial lip of the funnel-shaped wire crimp barrel to improve containment of the inserted conductor wire inwardly of the wire crimp barrel and

the attachment means further comprise a guide means which includes the insulation crimp barrel being spaced from the overlapped portion of the wire crimp barrel by a narrow slit and being shaped so that the wire conductor does not hang up on the inner axial lip of the wire crimp barrel during insertion.

4,641,912

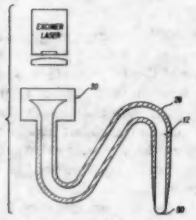
EXCIMER LASER DELIVERY SYSTEM, ANGIOSCOPE AND ANGIOPLASTY SYSTEM INCORPORATING THE DELIVERY SYSTEM AND ANGIOSCOPE

Tsvi Goldenberg, 2436 Washington St., Allentown, Pa. 18104

Filed Dec. 7, 1984, Ser. No. 679,538

Int. Cl.[4] A61N *5/06*; G02B *23/26*

U.S. Cl. 350—96.10 **16 Claims**



1. A system for the delivery of pulsed laser light having high peak energy utilizing an optical waveguide, wherein said waveguide comprises an optical fiber having an energy conducting core of substantially pure silica and further including an energy coupler between one end of said fiber and a laser source for enabling energy pulses having a predetermined energy level to be coupled into said fiber and the energy level of said pulses to be maintained without damage to said fiber.

4,641,913

OPTICAL INTEGRATED CIRCUIT UTILIZING THE PIEZOELECTRIC AND PHOTOCONDUCTIVE PROPERTIES OF A SUBSTRATE

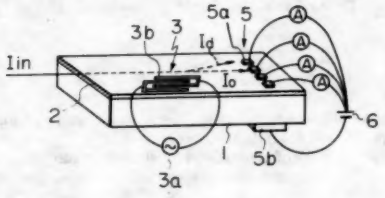
Yoshikazu Nishiwaki, and Yozo Nishiura, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 408,891, Aug. 17, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 692,872

Claims priority, application Japan, Aug. 17, 1981, 56-127689; Jan. 20, 1982, 57-7207; Jan. 20, 1982, 57-7208

Int. Cl.[4] G02B *6/12*

U.S. Cl. 350—96.11 **12 Claims**



10. An optical integrated circuit according to claim 1 further comprising an external circuit for measuring current from said electrode means.

4,641,914

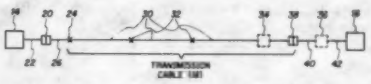
SINGLE MODE OPERATION WITH NON-SINGLE MODE OPTICAL FIBER TRANSMISSION CABLE

Sang K. Sheem, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 5, 1984, Ser. No. 668,129

Int. Cl.[4] G02B *6/26, 6/42*

U.S. Cl. 350—96.15 **5 Claims**



1. An optical fiber transmission path for interconnecting a transmitter and receiver for single mode operation at a predetermined wavelength, comprising the following elements, each forming a portions of said path:

a transmission cable comprising at least two optical fibers in said path, said two fibers being single mode at a wavelength longer than said predetermined wavelength and non single mode at the predetermined wavelength;

splice means for interconnecting said two optical fibers with substantially minimized splice loss as measured for only the fundamental mode at said predetermined wavelength;

another optical fiber, in said path between said transmitter and said cable, said another fiber being selected to be single mode at said predetermined wavelength; and

mode stripper means in said path near the end of the transmission cable which is nearest said receiver, for transmitting only the fundamental mode at said predetermined wavelength.

4,641,915

ROTARY JOINT FOR OPTICAL FIBERS

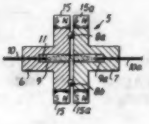
Kenichi Asakawa, Hachioji; Yuichi Shirasaki, Tokyo, and Yoshinao Iwamoto, Fujimi, all of Japan, assignors to Kokusai Denshindenwa Co., Ltd., Tokyo, Japan

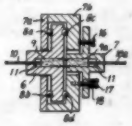
Continuation of Ser. No. 328,516, Dec. 8, 1981, abandoned. This application Nov. 16, 1984, Ser. No. 672,168

Claims priority, application Japan, Dec. 16, 1980, 55-176568; Dec. 16, 1980, 55-176569

Int. Cl.[4] G02B *6/32*

U.S. Cl. 350—96.18 **4 Claims**





1. A rotary joint for two optical fibers, each optical fiber having a tip and center axis, rod lenses fixed to the tips of the fibers, said rod lenses each having an optical axis and a refractive index which varies in the radial direction, normal to t central axis of the lens, with a variation proportional to the

square of the radius and proportional to a constant "a" wherein the length of the lens is equal to $\pi/(2\sqrt{a})$; two rotary members respectively having connected thereto said two rod lenses, a mechanism for imparting pressure to said rotary members to maintain said optical axes of said two rod lenses in alignment, and a mechanism for finely setting the angle between said two rod lenses, said mechanism being provided on at least one of said rotary members in order to cause parallel rays to be transmitted from one rod lens to the other rod lens such that one said rays coincides with the rotary axis of the respective rotary member and maintains angular settings of end faces of said lenses relative to said parallel rays during relative rotation between said two rotary members, thereby decreasing sensitivity of optical transmission to any displacement of the lenses from said axis.

4,641,916

OPTICAL TRANSMISSION ELEMENT

Ulrich Oestreich, Munich, and Ernst Mayr, Starnberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,290

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400605

Int. Cl.[4] G02B *6/44*

U.S. Cl. 350—96.23 **12 Claims**

1. An optical transmission element (AD) comprising:
a fibrous light waveguide (LW);
a cushion layer (PS) engaging and surrounding said waveguide;
a hard sheath (HL) surrounding and protecting said waveguide and cushion layer;
a glide layer (GS) disposed between and engaging each of said sheath (HL) and said cushion layer (PS) for accommodating movement between said sheath (HL) and cushion layer (PS), wherein the physical properties of said sheath include an elastic modulus (E) greater than 2000 N/mm^2 and a coefficient of thermal expansion less than $0.8\times10^{-4}/K$.

4,641,917

SINGLE MODE OPTICAL FIBER

Paul F. Glodis, Atlanta, and Terrence A. Lenhan, Chamblee, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 8, 1985, Ser. No. 699,641

Int. Cl.[4] G02B *6/22*

U.S. Cl. 350—96.33 **20 Claims**

1. Optical fiber adapted for guiding electromagnetic radiation, guided radiation comprising a LP_{01} mode and, possibly, a LP_{11} mode, the fiber being a single mode fiber for electromagnetic radiation of an operating wavelength, the optical fiber to be referred to as the first fiber, the first fiber comprising

(a) a core region having an equivalent radius a and an equivalent maximum refractive index n_c;

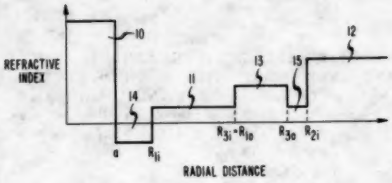
(b) a first cladding region surrounding the core and having an equivalent outer radius R_{1o}, an equivalent inner radius R_{1i}, and an equivalent refractive index n_1, with $n_1<n_c$; and

(c) a second cladding region surrounding the first cladding region and having an equivalent inner radius R_{2i} and an equivalent refractive index n_2, with $n_2 \geqq n_1$;

characterized in that

the first fiber further comprises a third cladding region having an equivalent inner radius R_{3i}, an equivalent outer radius R_{3o}, and an equivalent refractive index n_3, with $R_{3o} \leqq R_{2i}$, $R_{1o} \leqq R_{3i}$, and $n_3 > n_1$; wherein n_3, R_{3i} and R_{3o} are chosen such that

(d) at R_{3i} the square of the amplitude of the LP_{01} mode is at most 10^{-5} of the square of the amplitude of the LP_{01} mode at the center of the core, for radiation of the operating wavelength of the optical fiber;



(e) at R_{2i} in the first fiber, the square of the amplitude of the LP_{11} mode is at least 50% larger than the square of the amplitude of the LP_{11} mode in a second fiber at a radius equal to R_{2i}, the second fiber being identical to the first fiber except that in the second fiber $R_{3i}=R_{3o}$, the third cladding region thus being absent in the second fiber, the second fiber having a cut-off wavelength, the squares of the amplitudes being compared at the cut-off wavelength of the second fiber; and

(f) at R_{2i} and at the operating wavelength, the square of the amplitude of the LP_{01} mode in the first fiber is at most 50% larger than the square of the amplitude of the LP_{01} mode in the second fiber, at the same wavelength and the same radius.

4,641,918

PORTABLE PANORAMIC THEATRE

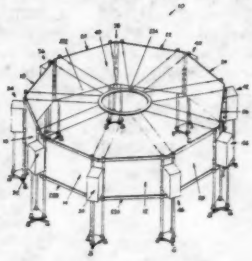
Michael Moffatt; James LePage, and Gerald Englar, all of Toronto, Canada, assignors to EML Environmental Simulations Inc., Toronto, Canada

Filed Dec. 31, 1985, Ser. No. 814,980

Claims priority, application Canada, Dec. 27, 1984, 471082

Int. Cl.[4] G03B *21/56*

U.S. Cl. 350—125 **30 Claims**



1. A collapsible panoramic theatre for use with a multiplicity of projectors, comprising:
a multiplicity of generally vertical viewing screens arranged in a polygonal arrangement which defines an internal viewing region, each pair of adjacent viewing screens in the polygonal arrangement defining a vertical corner, each vertical corner being oppositely disposed across the internal viewing region to one of the viewing screens;

a multiplicity of towers external to the polygonal arrangement of viewing screens, one of the towers being located at and associated with each of the corners of the polygonal arrangement;

each of the towers including

(a) a free-standing base,

(b) a support structure extending upwardly from the base,

(c) screen support means, mounted on the support structure, for releasably supporting the pair of adjacent viewing screens at the vertical corner associated with the tower, and

(d) projector support means, mounted on the support structure for, releasably supporting one of the projectors;

means defining a projection passage at each vertical corner positioned to permit projection of light from the projector of the tower associated with the vertical corner across the internal viewing region onto the associated oppositely disposed one of the viewing screens.

4,641,919

STEREOSCOPIC VIEWER FOR AERIAL PHOTOGRAPHS

Herve R. Gresse, Boulogne, and Annick R. Carn, Versailles, both of France, assignors to Compagnie de Materiel de Micrographie "C.M.M." , St. Maur, France

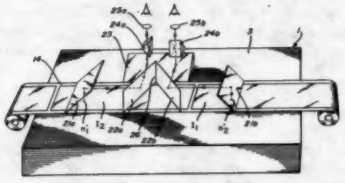
Continuation-in-part of Ser. No. 394,841, Jul. 2, 1982, Pat. No. 4,498,735. This application Dec. 8, 1983, Ser. No. 559,289

Claims priority, application France, Jul. 8, 1981. 81 13384

The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.

Int. Cl.[4] G02B *27/24*

U.S. Cl. 350—138 **23 Claims**



1. A stereoscopic viewer for aerial photographs adapted to be placed over a film of panoramic exposures to be examined, said film being arranged flatly and being suitably illuminated, said viewer comprising: optical means for examining simultaneously, through two eyepieces having substantially parallel axes, corresponding points in two successive panoramic photographs in the film to be examined, said optical means defining an optical path between each of the two photographs and one of the observer's eyes; adjusting means for displacing one of the two images perceived by the observer in relation to the other; said optical means comprising, for each optical path, a set of plane-mirrors and, a rotating system for rotating the images substantially about the corresponding viewing axis and assuring an even number of reflections; said adjusting means comprising elements permitting at least one of the rotating systems to pivot about a fixed axis.

4,641,920

OPTICAL ELEMENT HAVING THE FUNCTION OF CHANGING THE CROSS-SECTIONAL INTENSITY DISTRIBUTION OF A LIGHT BEAM

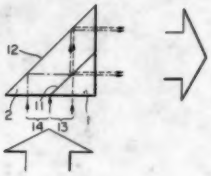
Kazuhiko Matsuoka; Masayuki Usui; Kazuo Minoura; Takesi Baba, all of Yokohama, and Atsushi Someya, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1984, Ser. No. 586,971

Claims priority, application Japan, Mar. 11, 1983, 58-39143

Int. Cl.[4] G02B *27/14*

U.S. Cl. 350—173 **9 Claims**



1. An optical apparatus comprising:

a light source unit for generating a light beam which has a generally symmetrical cross-sectional intensity about a central ray thereof;

an optical element for receiving on an incidence plane thereof a light beam from said light source unit and substantially equalizing a cross-sectional intensity distribution of the light beam, said light source unit being positioned so that the incident position of the central ray of the incident light beam generally coincides with a central line of the light beam incident plane;

said optical element including:

a plurality of prisms each having at least two end surfaces, and at least one having an externally facing surface;

at least one joined surface formed by joining one said prism to another said prism, said joined surface having the function of amplitude-dividing the light beam and causing it to have a substantially uniform characteristic over the total area thereof;

a first group comprising one end surface of each of an even number of said prisms being arranged to form said light beam incidence plane which thus includes an even number of said end surfaces of said prisms, said even number of said end surfaces of said first group being disposed symmetrically with respect to a central line between two of said end surfaces of said first group, said central line thereby symmetrically dividing said light beam incidence plane and forming at least one set of paired symmetrical end surfaces of said first group;

a light beam exit plane formed by arranging a second group of end surfaces of said prisms; and

at least one reflection surface formed by said externally facing surface of at least one of said prisms;

the relationship of said reflection surface and said joined surface relative to said light beam incidence plane and to said light beam exit plane, the amplitude dividing rate of said joined surface, and the reflection factor of said reflection surface being such as to cause incident light beam portions incident on each set of said paired symmetrical end surfaces of said light beam incidence plane to emerge from each end surface of said light beam exit plane such that the cross-sectional intensity distribution of one of said incident light beam portions incident on said light beam incidence plane on one side of said central line and the cross-sectional intensity distribution of another of said incident light beam portions incident on said light beam incidence plane on the other side of said central line are superposed and that equal parts of the quantity of light of said one and said other light beam portions are combined so that the light beam emergent from said light beam exit plane has a substantially uniform intensity distribution.

4,641,921
OPTICAL ADJUSTING PROCESS

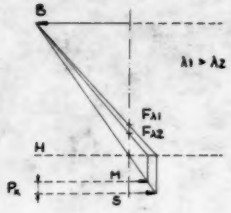
Heinz Beneking, Aachen, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 715,022

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1984, 3413374

Int. Cl.⁴ G02B *27/00*

U.S. Cl. 350—320 **4 Claims**



1. An optical adjusting process for positioning a mask structure relative to a semiconductor substrate for performance of proximity printing, the mask structure being disposed in a first plane and the substrate being disposed in a second plane spaced from the first plane by a small distance having the value required by proximity printing, said process comprising: positioning an objective lens which is optimally corrected for two selected light wavelengths for forming, in a common image plane, a high-definition image of the first plane by light having one of the selected wavelengths and a high-definition image of the second plane by light having the other one of the selected wavelengths; and applying light having the first one of the selected wavelengths to at least the mask structure and light having the second one of the selected wavelengths to at least the substrate.

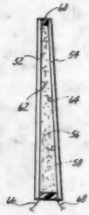
4,641,922
LIQUID CRYSTAL PANEL SHADE

Keith D. Jacob, Ann Arbor, Mich., assignor to C-D Marketing, Ltd., Ann Arbor, Mich.

Filed Aug. 26, 1983, Ser. No. 527,435

Int. Cl.⁴ G02F *1/13, 1/135*

U.S. Cl. 350—331 R **11 Claims**



1. In combination with a vehicle having a window through which sunlight shines into an interior occupant space of the vehicle, an electrically controllable sun shade comprising a liquid crystal medium disposed as a layer having a area of expanse overlying a certain area of the window of a vehicle to provide for sun shading of an occupant, said liquid crystal medium having an electro-optical characteristic wherein the degree of opaqueness is correlated with the voltage gradient existing at any point in the medium, a pair of electrodes bounding the area of expanse of liquid crystal medium on opposite sides, means for creating a selectable voltage across said electrodes, and hence across the area of expanse of said liquid crystal medium layer, and means for creating from said selectable voltage desired sun shading patterns within the interior space on the occupant by creating different voltage gradients at different locations over the area of expanse of the liquid crystal medium layer wherein the different voltage gradients result from the liquid crystal medium layer having different thicknesses at different locations over its area of expanse corresponding to the desired sun shading patterns to be achieved within the interior space.

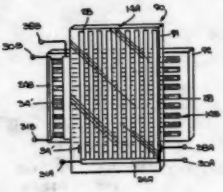
4,641,923
FIELD SENSITIVE OPTICAL DISPLAYS WITH ELECTRODES WITH HIGH AND LOW IMPEDANCE PORTIONS

William Bohmer, Jackson Heights, N.Y.; Walter J. Betancourt, Oak Ridge, and Louis S. Hoffman, Morristown, both of N.J., assignors to Control Interface Company Limited, Randolph, N.J.

Division of Ser. No. 479,349, Apr. 1, 1983, Pat. No. 4,493,531, which is a continuation of Ser. No. 165,753, Jul. 3, 1980, abandoned. This application Jun. 25, 1984, Ser. No. 624,119

Int. Cl.⁴ G02F *1/133, 1/137*

U.S. Cl. 350—335 **7 Claims**

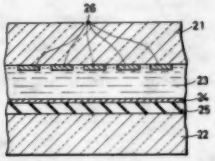


1. Display apparatus comprising first and second liquid crystal cells, each comprising spaced apart opposed first and second transparent plates and a twisted nematic liquid crystal material disposed between the plates, means for aligning the molecules of the liquid crystal material in the absence of a field to rotate the plane of polarization of plane polarized light passing through the material through a predetermined angle, first and second electrodes disposed adjacent to the first and second plates respectively of each of the first and second liquid crystal cells and in contact with the liquid crystal material, the first electrode of the first and second cells comprising a linearly-extending resistive portion disposed adjacent one side of the first plate, the resistance of the resistive portion being such that when a given voltage is applied across the resistive portion, a voltage gradient exists, and a plurality of substantially low impedance, conductive portions of uniform width electrically connected to and transversely extending from different locations of the resistive portion, the low impedance portions being separated by substantially uniform intervals, the second electrode of the first and second cells having substantially low impedance portions and extending adjacent to the surface of the second plate substantially coextensive with and opposite to the low impedance portions of the first electrode, and terminal means for applying voltages to the first and second electrodes, the conductivity of the low impedance portions of the first and second electrodes having a low impedance with respect to said high impedance portion, the first liquid crystal cell having the low impedance portions of its first electrode extending in one direction and the second liquid crystal cell having the low impedance portions of its first electrode extending in a direction different than the one direction of the low impedance portions of the first electrode of the first liquid crystal cell; and first and second light plane polarizer means for respectively transmitting plane polarized light in one plane and blocking plane polarized light in another plane intersecting the plane of the one plane, the liquid crystal cells being disposed between the polarizer means.

4,641,924
LIQUID CRYSTAL DEVICE

Yoshiharu Nagae; Shunichi Numata; Noriyuki Kinjo, and Katuyuki Funahata, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1985, Ser. No. 696,908
Claims priority, application Japan, Feb. 3, 1984, 59-17052
Int. Cl.[4] G02F 1/13
U.S. Cl. 350—339 R 15 Claims

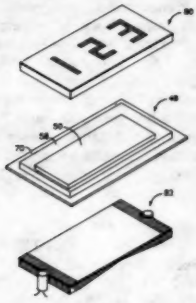


8. A liquid crystal device comprising a thermal writing type liquid crystal, a heat electrode for generating heat necessary for said thermal writing, and a support for supporting said crystal and said heat electrode, said device further comprising an insulating layer having a coefficient of thermal expansion lying between the coefficient of thermal expansion of said heat electrode and that of said support, arranged between the heat electrode and support, the coefficient of thermal expansion of said insulating layer, relative to that of the support and heat electrode, being such that heat electrode failure or peeling from the support due to thermal stress resulting from the difference between the coefficient of thermal expansion of the heat electrode and the support is avoided.

4,641,925
LIQUID CRYSTAL DISPLAY ASSEMBLY WITH PHOSPHORESCENT BACKLIGHTING

Bernard V. Gasparaitis, Tamarac, and C. Patrick Richardson, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 20, 1986, Ser. No. 841,988
Int. Cl.[4] G02F 1/13; F21V 9/16; G01J 1/58; G01T 1/10
U.S. Cl. 350—345 18 Claims



1. A display assembly, for use with a supplemental light source, said display assembly comprising in combination:

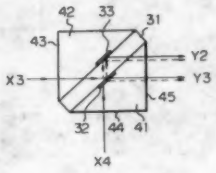
a display; and

thin phosphorescent layer having front and rear surfaces, said front surface positioned adjacent said display, whereby light is emitted into said display from said front surface when said rear surface is illuminated by said light source.

4,641,926
POLARIZING ELEMENT

Masataka Shirasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 513,613, Jul. 14, 1983, abandoned. This application Dec. 26, 1985, Ser. No. 815,279
Claims priority, application Japan, Jul. 14, 1982, 57-122641; Aug. 31, 1982, 57-151529; Aug. 31, 1982, 57-151530; Mar. 21, 1983, 58-053593; Apr. 30, 1983, 58-076573
Int. Cl.[4] G02B 27/14, 27/28
U.S. Cl. 350—394 4 Claims

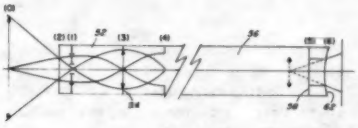


1. A polarizing element comprising a first right angle prism, a second right angle prism, and a transparent flat plate having at least two parallel surfaces, a polarization separating layer provided on a portion of a first one of said two parallel surfaces of the transparent flat plate, and an optical reflecting layer provided on a portion of the second parallel surface of the transparent flat plate, said transparent flat plate being interposed between the first right angle prism and the second right angle prism, wherein each of said first and second right angle prisms has two right-angle-forming surfaces which intersect to form the respective right angle and a diagonal surface, wherein a light beam incident on a respective one of said surfaces of each of said first and second right angle prisms is separated into two respectively polarized light beams by said polarization separating layer, one of said polarized light beams is reflected by said optical reflecting layer, and two respective output light beams are output through a predetermined other one of said surfaces of a predetermined one of said first and second right-angle prisms.

4,641,927
CHROMATIC ABERRATION CORRECTED GRADIENT INDEX LENS SYSTEM

Rochelle Prescott, Arlington, and Dennis C. Leiner, North Andover, both of Mass., assignors to Dyonics, Inc., Andover, Mass.

Filed Mar. 24, 1982, Ser. No. 361,266
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.[4] G02B 6/18
U.S. Cl. 350—413 15 Claims



1. An optical system comprised of at least one gradient index lens and an image forming homogeneous lens affixed to an end surface of said gradient index lens,

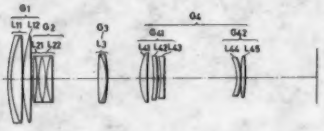
said gradient indes lens being of such a length that an image is not formed at its exit surface,

said system constructed and arranged to substantially correct both axial and lateral chromatic aberration of an image transmitted through said system.

4,641,928
FOUR-GROUP TELEPHOTO ZOOM LENS

Yoshinari Hamanishi, Tokyo, Japan, assignor to Nippon Kokagu K. K., Tokyo, Japan

Filed Mar. 27, 1984, Ser. No. 593,924
Claims priority, application Japan, Mar. 30, 1983, 58-54913
Int. Cl.[4] G02B *15/167*
U.S. Cl. 350—427 17 Claims



1. A four-group telephoto zoom lens consisting of, in succession from the object side, first group having a positive refracting power and movable on the optical axis of the lens for focusing, second group having a negative refracting power and movable on the optical axis for changing a composite focal distance of an entire system, a third group having a positive refracting power and movable on the optical axis for maintaining image plane at a fixed position and a fourth group as relay lens system having a positive refracting power, the improvement wherein said second group consists of a first cemented negative lens component having in the order from the object side a positive lens and a negative lens cemented together and a second cemented negative lens component having a negative lens and a positive lens cemented together and the improvement satisfying the conditions:

$$0.5<f_{21}/f_{22}<1.0$$

$$1.5<f_{21}/f_2<2.1$$

$$2.0<f_{22}/f_2<2.8$$

$$-0.09<n_4-n_5<0.09$$

$$0.09<n_7-n_6<0.2$$

wherein f_{21} and f_{22} represent focal distance of said first and second cemented negative lens components, respectively, in said second group; f_2 represents a composite focal distance of said second group; n_4 and n_5 represent refractive indexes of the positive lens and the negative lens, respectively, in said first negative lens component; and n_6 and n_7 represent refractive indexes of the negative lens and the positive lens, respectively, in said second lens component.

4,641,929
BIASPHERICAL LENS

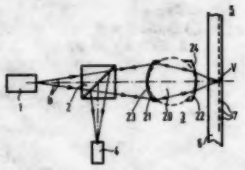
Josephus J. M. Braat, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1985, Ser. No. 689,672
Claims priority, application Netherlands, Oct. 22, 1984, 8403198
Int. Cl.[4] G02B *3/02, 13/18*
U.S. Cl. 350—432 6 Claims

1. An lens having two aspheric refractive surfaces, said lens comprising:

a lens substrate, said lens substrate being a sphere; and

first and second layers of transparent plastic on the substrate, said first layer being arranged on a first side of the substrate, said second layer being arranged on a second side

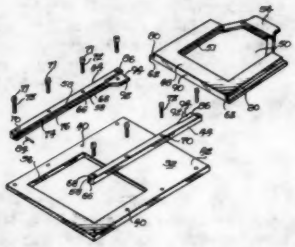


of the substrate opposite to the first side, each layer having an aspheric outer surface.

4,641,930
APPARATUS FOR POSITIONING FLAT OBJECTS FOR MICROSCOPIC EXAMINATION

T. Charles Podvin, Poway, and Gene A. Porter, Escondido, both of Calif., assignors to Micromanipulator Microscope Co., Inc., Escondido, Calif.

Filed Dec. 15, 1983, Ser. No. 561,643
Int. Cl.[4] G02B *21/26*
U.S. Cl. 350—529 10 Claims



1. In combination

a micorscopic examination stage having a flat top plate,

paddle means for carrying a generally flat object in horizontal and vertical alignment, edge portions of said paddle means having parallel keybars,

a pair of guide rail means along opposite sides of said top plate, each having an inwardly extending upper flange defining an elongated keyway therebelow for slidably receiving one of said keybars, said guide rails having an entrance region,

said upper flanges having parallel sections and, at said entrance region, being recessed outward relative to said parallel sections to a distance greater than the width of said paddle means, whereby one end of said paddle means may be lowered into said entrance region.

4,641,931
DUAL MAGNIFICATION TELESCOPE

Fernand R. Loy, Sceaux, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 716,883, Mar. 27, 1985, abandoned.
This application Jun. 16, 1986, Ser. No. 874,878
Claims priority, application France, Apr. 17, 1984, 84 06058
Int. Cl.[4] G02B *23/12, 6/00*
U.S. Cl. 350—538 8 Claims

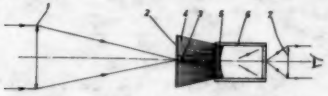
1. A dual magnification telescope comprising:

an objective for forming an image of a field of view; and

an eyepiece for receiving the image of the field of view;

characterized in that the telescope further comprises an optical fiber array arranged between the objective and the eyepiece for passing the image of the field of view through

the fiber array to the eyepiece, said fiber array comprising a first bundle of optical fibers having a first magnification and a second bundle of optical fibers having a second magnification different from the first magnification, said



first bundle passing a first portion of the image to the eyepiece, said second bundle passing a second portion of the image, different from the first portion of the image, to the eyepiece.

4,641,932

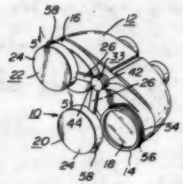
PROTECTIVE LENS COVER FOR OPTICAL MEANS

Wolfgang Harms, 209 Harvest Rd., Cherry Hill, N.J. 08002

Filed Jun. 13, 1985, Ser. No. 744,279

Int. Cl.[4] G02B *23/18*; G03B *11/04*; B65D *55/16*

U.S. Cl. 350—587 **8 Claims**



1. A protective cover for an optical means having an exposed lens portion comprising a cover body having a lens cap portion for being removably secured over the lens portion of an optical means and a connecting portion extending from the cap portion, and attachment means for securing the connecting portion of the body with the optical means and allowing movement of the cap portion between a first position proximate to the lens portion and a second position away from the lens portion, the attachment means urging the body toward its second position upon being displaced therefrom, the lens cap portion is cup shaped for being received over the rim of the lens portion of the optical means and the connecting portion is flat and elongated having a first end portion secured with the cap portion and extending second end portion, and the attachment means is provided by an elongated opening in the second end portion of the connecting portion and a screw means attached to the optical means and having a portion with an elongated cross-section received through the elongated opening of the connecting portion, the elongated cross-section of the screw means being in alignment with the elongated opening of the connecting portion of the body when the body is in its second position and the body being urged toward its second position when displaced therefrom.

4,641,933

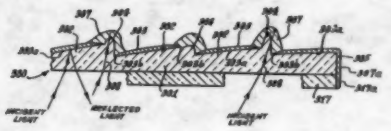
ELIMINATION OF INTERNAL REFLECTIONS AND DIFFRACTIONS FROM JUNCTURES IN, AND AT THE PERIPHERY OF, A SEGMENTED MIRROR

C. James Blom, Bakersfield, Calif., assignor to Roxor Corporation, Bakersfield, Calif.

Division of Ser. No. 642,179, Aug. 20, 1984, which is a continuation-in-part of Ser. No. 385,544, Jun. 7, 1982, Pat. No. 4,470,665, which is a division of Ser. No. 233,106, Feb. 10, 1981, Pat. No. 4,368,951. This application Nov. 15, 1985, Ser. No. 798,438

Int. Cl.[4] G02B *5/08, 1/10*; B05D *5/06*; C23C *16/06*

U.S. Cl. 350—613 **19 Claims**



5. In a transparent molded segmented mirror having individual sectors on a transparent molding and comprising a myriad of reflecting adjacent surfaces at the back side of the mirror away from the viewer, said surfaces oriented to produce, in the eyes of the viewer, one virtual image, or separate virtual images from separate portions of such molded mirror, there being a network of zones separating the individual reflecting surfaces, the improvement comprising

(a) a material coating said zones and which includes a light absorber,

(b) and including metallizing material on the molding and defining said reflecting surfaces and characterized in that the thickness of the metallizing material is substantially reduced to define feather edges at and about peripheries of the sectors,

(c) whereby undesirable reflections from said zones are substantially reduced.

4,641,934

OPHTHALMIC LENS WITH DIFFRACTIVE POWER

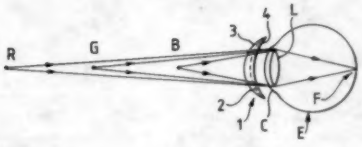
Michael H. Freeman, Clwyd, United Kingdom, assignor to Pilkington P.E. Limited, United Kingdom

Continuation-in-part of Ser. No. 368,362, Apr. 14, 1982. This application Sep. 20, 1983, Ser. No. 533,993

Claims priority, application United Kingdom, Sep. 29, 1982, 8227818

Int. Cl.[4] G02C *7/02, 7/04*; G02B *5/32*; A61F *2/16*

U.S. Cl. 351—159 **18 Claims**

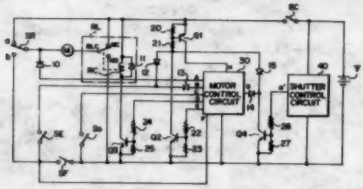


1. An ophthalmic lens comprising diffracting means providing negative diffractive power which introduces positive longitudinal chromatic aberration that adds to the natural longitudinal chromatic aberration of the eye and hence increases the range of the chromatic effect.

4,641,935
CAMERA

Takao Umezu; Minoru Ishiguro, and Tetsuo Nishizawa, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Sep. 25, 1985, Ser. No. 780,005
Claims priority, application Japan, Sep. 28, 1984, 59-203084
Int. Cl.[4] G03B *1/12*
U.S. Cl. 354—173.11 **5 Claims**

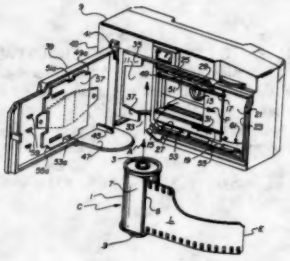


1. A camera comprising:
film detecting means, provided in a film running path in said camera, for detecting the presence of a film;
film winding detecting means for detecting that said film is wound up by a predetermined length;
driving means for driving a film winding mechanism; and
control means for taking in detection outputs from said film detecting means and said film winding detecting means to control the operation of said driving means in response to said detection outputs; wherein, when the absence of the film in the film running path is detected by said film detecting means, said control means controls said driving means to operate until said film winding detecting means detects that at least a predetermined length of said film is wound up.

4,641,936
FILM LEADER POSITIONING APPARATUS

Frederick W. Harvey, Webster, and Glenn W. Johnson, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1986, Ser. No. 818,164
Int. Cl.[4] G03B *1/04*
U.S. Cl. 354—212 **5 Claims**

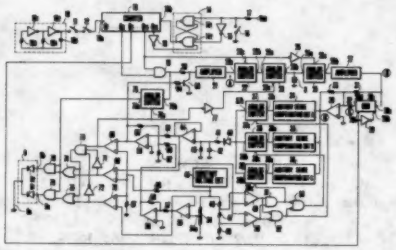


1. An improved photographic camera of the type wherein (a) a loading chamber receives a film cartridge in an axial direction substantially at the same time a film leader projecting from the cartridge is transversely received in a feed path, (b) a cartridge positioning member is disposed on a back door to depress the film cartridge in the axial direction in said loading chamber, to properly position the cartridge in the chamber, in response to closure of the door, and (c) cooperating means are disposed adjacent said feed path and on said back door, respectively, for transversely positioning the film leader in the event it is skewed, to straighten the leader along the path, in response to closure of the door, and wherein the improvement comprises:
means mounting said back door for closure to enable said cartridge positioning member to axially position the film cartridge in the loading chamber before said leader positioning means can transversely position the film leader in said feed path.

4,641,937
SELF-TIMER DEVICE FOR A CAMERA

Nobuyuki Suzaki, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 622,536, Jun. 20, 1984, abandoned, which is a continuation of Ser. No. 407,052, Aug. 11, 1982, abandoned. This application Mar. 14, 1985, Ser. No. 712,335
Claims priority, application Japan, Aug. 18, 1981, 56-129173; Dec. 17, 1981, 56-204954; Dec. 17, 1981, 56-204955; Dec. 17, 1981, 56-204957; Dec. 17, 1981, 56-204958; Dec. 17, 1981, 56-204959
Int. Cl.[4] G03B *17/18*; H03G *3/24*
U.S. Cl. 354—238.1 **15 Claims**



1. For a camera having a self-timer, a device which displays the operation of the self-timer comprising:
(a) sound generating means for producing sound while the self-timer is in operation;
(b) light emitting means for emitting the light for displaying the operation of the self-timer;
(c) detecting means for detecting the level of the environmental noise;
(d) set means for setting predetermined noise level; and
(e) control means for driving the light emitting means for displaying the operation of the self-timer when the level of the environmental noise detected by the detecting means is larger than the predetermined noise level set by the set means.

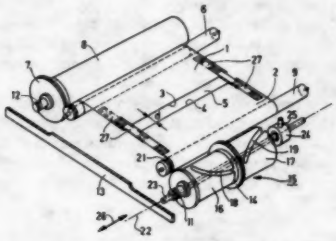
4,641,938
PHOTOGRAPHIC SHUTTER OF THE FOCAL-PLANE TYPE

Jean P. Lazzati, Franconville, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 767,533, Mar. 4, 1985, which is a continuation of Ser. No. 507,405, Jun. 24, 1983. This application Sep. 16, 1985, Ser. No. 776,092
Claims priority, application France, Jul. 9, 1982, 82 12138
Int. Cl.[4] G03B *9/34*
U.S. Cl. 354—243 **13 Claims**

1. A photographic shutter of the focal-plane type, comprising a first and a second blind which extend in parallel planes close to each other and which are partly wound on respective drive rollers which are situated on one side and on an other side of an exposure window, respectively, and which are mounted for rotation on a chassis, each of the first and the second blinds having an edge which is movable across the exposure window so that a shutter slit is formed between said

edges, the drive roller of the first blind being drivable directly by a first pinion which is rotatably coupled to a drive mechanism mounted on said chassis, characterized by further comprising a second pinion which is mounted for rotation on said chassis, the second pinion being arranged opposite the first pinion on the other side of the exposure window, the second pinion being rotatably coupled to said first pinion by means of a mechanical connection arranged such that, at any instant, a relative position of the blinds can be obtained which defines a



shutter slit of a predetermined width, a third pinion which is coaxial with the second pinion and which is drivable by said second pinion via an angular-positioning device which is coaxial with the second and the third pinions, the angular positioning device being constructed and arranged for movement which is independent of simultaneous rotary movements of the second and the third pinions, so that the third pinion can drive said drive roller of said second blind with a speed of rotation equal to that of the drive roller of the first blind, and tension means for maintaining each blind in its respective plane.

4,641,939

AUTOMATIC FILM THREADING APPARATUS FOR ROLL-FILM PROCESSORS

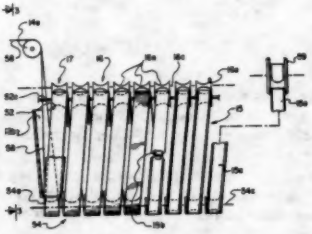
William M. Kitner, Inglewood, Calif., assignor to Vari-X, Irvine, Calif.

PCT No. PCT/US83/00746, § 371 Date Feb. 11, 1985, § 102(e) Date Feb. 11, 1985, PCT Pub. No. WO84/04603, PCT Pub. Date Nov. 22, 1984

PCT Filed May 11, 1983, Ser. No. 702,983

Int. Cl.[4] G03D *3/13*

U.S. Cl. 354—313 **18 Claims**



1. An automatic film threading apparatus for roll-film processors comprising:

(a) a roll-film processor comprising in part:

(1) a film developing compartment comprising a piurality of film developing and processing chambers with each chamber having an upper port and a lower port,

(2) a film loading compartment having means to accept and retain exposed film and also having a film input port located near the entrance to the upper port of the first developing and processing chamber,

(3) a powered film spool assembly consisting of a plurality of powered film spools rigidly attached to a powered film spool axle where each spool is centrally located above and between the upper ports of a film developing and processing chamber pair,

(4) a bottom film roller assembly consisting of a plurality of film rollers rotatably attached to a fixed bottom film roller axle where said bottom film roller assembly is centrally located below and between the lower ports of a film developing and processing chamber pair,

(b) a threading leader assembly consisting of a flexible strip having on one end the means for attaching to the end of the exposed film and on the other end a threading tip that is initially inserted through the film input port on said film loading compartment,

(c) a pinch-roller assembly comprising a plurality of pinch rollers rotatably attached to a fixed pinch roller axle where a pinch roller is located and attached directly above each powered film spool at a distance that allows the combination of the pinch roller and film spool to firmly grip and pass said threading leader assembly,

(d) means for accurately guiding said threading leader assembly and the attached exposed film out the upper port of one film developing and processing chamber, between a pinch roller and powered film spool, and into the upper port of the following film developing and processing chamber, and

(e) means for accurately guiding said threading leader assembly and the attached exposed film out the lower port of one film developing and processing chamber, below the bottom film roller and into the lower port of the following film developing and processing chamber.

4,641,940

SHEET FILM PROCESSING APPARATUS FOR EXPOSED SHEET FILM

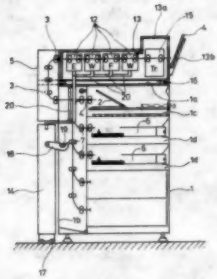
Jürgen Müller; Alfons Kastl, and Heinrich Färber, all of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 14, 1985, Ser. No. 765,873

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3432077

Int. Cl.[4] G03D *3/08*

U.S. Cl. 354—322 **22 Claims**



1. Sheet film processing apparatus for sheet film, comprising:

means for processing the sheet film, and having an upper side and a back side;

means for developing the sheet film including a plurality of developing tanks holding fluid, located above said processing means;

means for transporting the sheet film from said processing means to said developing means;

a fluid collector basin located between said developing tanks and said upper side of said processing means, said collector basin being provided so as to catch any fluid which may fall from said developing means;

a waste water tank provided at said back side of said processing means; and

means for connecting said developing tanks and said collector basin with said waste water tank so as to lead said fluid to said waste water tank.

4,641,941

TREATMENT TANK IN PHOTOSENSITIVE MATERIAL PROCESSING SYSTEM INCLUDING A PLURALITY OF OVERFLOW DEVICES

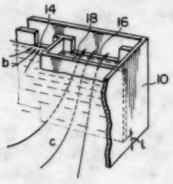
Yasuhito Yoshimi, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jul. 29, 1985, Ser. No. 760,327

Claims priority, application Japan, Aug. 2, 1984, 59-118414[U]

Int. Cl.⁴ G03D *3/02*

U.S. Cl. 354—324 **5 Claims**



1. A treatment tank for use in a photosensitive material processing system of the type in which treatment liquid is fed into said treatment tank through a liquid feeding device, and the liquid level of said tank is kept constant by way of overflow, comprising, in said treatment tank, a plurality of overflow devices, and a partition member for a separating the part of the surface of the treatment liquid which extends to at least one of said overflow devices from the part of the surface of the treatment liquid which extends to the remaining overflow devices, said partition member allowing treatment liquid to flow from one side thereof to the other side thereof below the liquid surface.

4,641,942

FOCUS DETECTING SYSTEM

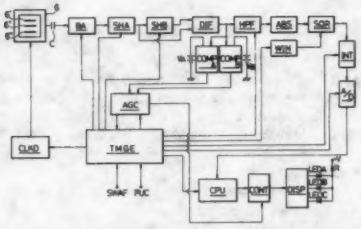
Shinji Sakai; Nobuhiko Shinoda, both of Tokyo; Kazuya Hosoe, Kunitachi, and Takao Kinoshita, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 627,488, Jul. 5, 1984, which is a continuation of Ser. No. 572,972, Jan. 23, 1984, abandoned, which is a continuation of Ser. No. 310,433, Oct. 9, 1981, abandoned. This application Aug. 21, 1985, Ser. No. 767,668

Claims priority, application Japan, Oct. 16, 1980, 55-144781; Oct. 23, 1980, 55-149079; Jan. 14, 1981, 56-4357

Int. Cl.⁴ G03B *3/00*

U.S. Cl. 354—406 **31 Claims**



1. A system for repeatedly detecting a state of focusing of an imaging optical system and repeatedly generating an output representing the focus state, comprising:

(A) image sensing means for repeatedly sensing an image of the object formed by the imaging optical system and generating a signal representing the image of the object in each repetition of the sensing operation of said image sensing means, wherein said image sensing means has signal integrating effects and generates a signal corresponding to the image;

(B) focus detecting means for receiving the signal from said image sensing means and detecting a focusing state of the imaging optical system on the object, said focus detecting means generating an output representing the focusing state in each repetition of the sensing operation of said image sensing means;

(C) means for stabilizing abrupt changes between the outputs sequentially provided in two consecutive repetitions of the sensing operation of said image sensing means from said focus detecting means; and

means for controlling a signal integrating time of said image sensing means, said stabilizing means being responsive to said integrating time controlling means to stabilize the output of said focus detecting means against changes in the signal integrating time of said image sensing means.

4,641,943

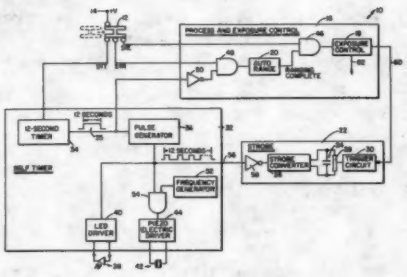
PHOTOGRAPHIC CAMERA WITH ELECTRONIC FLASH HAVING PERIODICALLY DISABLED CHARGING APPARATUS

Judith L. Neely, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 30, 1985, Ser. No. 792,869

Int. Cl.⁴ G03B *15/05, 17/40*

U.S. Cl. 354—413 **10 Claims**



6. Apparatus for inhibiting the charging of an electronic flash in a photographic camera having a self-timer, whenever an indicator indicative of self-timer operation is activated, comprising:

a manually actuatable self-timer for generating a film exposure sequence initiating electrical signal a predetermined time after the timing cycle of said self-timer has been initiated;

an electronic flash including a flashtube and a charging system for storing an electrical charge for subsequent discharge across the light emitting element of said flashtube during an exposure interval;

means responsive to the operation of said self-timer for generating a visual and/or audible signal indicative of self-timer operation; and

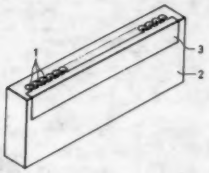
control means for enabling the electronic flash to operate in a charge mode during said self-timer timing cycle and for inhibiting the operation of said charging system during said timing cycle whenever a self-timer operation indicator is activated.

4,641,944

IMAGE EXPOSING APPARATUS

Haruhisa Honda; Hiroaki Tsuchiya, both of Yokohama; Michitaka Setani, Kawasaki, and Mitsuhiro Tokuhara, Amagasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1985, Ser. No. 745,211
Claims priority, application Japan, Jun. 21, 1984, 59-128363; Nov. 9, 1984, 59-235216; Nov. 9, 1984, 59-235217
Int. Cl.[4] G03B 27/00
U.S. Cl. 355—1 7 Claims



1. An image exposing apparatus comprising:

a focusing optical system for focusing an image onto a photosensitive member, said focusing optical system being constructed by one-line array of a plurality of converging light transmission media; and

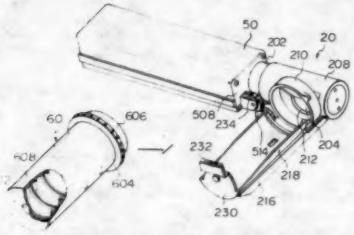
light intensity distribution correction means arranged in a light path for forming said image for eliminating a non-uniformity of light intensity on said photosensitive material due to said focusing optical system, said light intensity distribution correction means having a shape to block light fluxes each passing through a center area of each of said converging light transmission media and having a repetitive pattern arranged at a pitch corresponding to a pitch of said converging light transmission media.

4,641,945

DEVELOPER SUPPLY DEVICE FOR DRY PROCESS ELECTROPHOTOGRAPHIC COPIER

Masumi Ikesue, Tokyo, and Takashi Ikeda, Sagamihara, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 596,198
Claims priority, application Japan, Apr. 9, 1983, 58-63438
Int. Cl.[4] G03G 15/08
U.S. Cl. 355—3 DD 3 Claims



1. A developer supply device for an electrophotographic copier which includes a dry process developing unit for developing an electrostatic latent image on a photoconductive element by means of a dry process developer, comprising:

a rotatable cylindrical developer cartridge having a spiral developer guide member on an inner peripheral wall thereof and a mouth for developer supply at one end thereof;

developer cartridge holder means for holding said developer cartridge such that said mouth of the developer cartridge communicates with a developer inlet opening of the developing unit, said cartridge holder means being movable angularly about an axis of the developer inlet opening to selectively fix the cartridge held by the cartridge holder means in at least a vertical position and a horizontal position inside the copier; and

fixing means for fixing the cartridge in a horizontal position inside the copier;

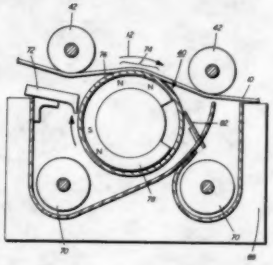
the fixing means comprising a magnetic member mounted in a portion of the holder means and a locking member which is located in a portion of a housing of the copier to magnetically couple with said magnetic member.

4,641,946

DEVELOPMENT SYSTEM

Richard L. Forbes, II, Pittford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 29, 1985, Ser. No. 759,992
Int. Cl.[4] G03G 15/09
U.S. Cl. 355—3 DD 10 Claims



1. An apparatus for developing a latent image recorded on a flexible member, including:

magnetic means, positioned closely adjacent the flexible member to define a development zone therebetween, for transporting a developer material comprising at least magnetic carrier granules having toner particles adhering thereto into contact with the flexible member in the development zone, said magnetic member generating at least a radial magnetic field in the development zone of a magnitude to optimize the attraction of the toner particles from the carrier granules to the latent image and at least a tangential magnetic field at the exit of the development zone of a magnitude to optimize the adherence of carrier granules thereto so as to prevent carrier granules from adhering to the flexible member with the magnitude of the tangential magnetic field at the exit of the development zone being greater than the magnitude of the radial magnetic field in the center of the development zone; and

means for maintaining the flexible member at a preselected tension of sufficient magnitude so that the developer material being transported into contact therewith deflects the flexible member about said magnetic means to form an extended development zone.

4,641,947

HOUSING APPARATUS

Takao Ishida, Kawasaki, and Mamoru Shimono, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 521,827, Aug. 10, 1983, abandoned.
This application Feb. 11, 1986, Ser. No. 829,455
Claims priority, application Japan, Aug. 20, 1982, 57-144473
Int. Cl.[4] G03G 15/00, 21/00
U.S. Cl. 355—3 R 20 Claims

1. A copying apparatus comprising:

a sheet conveyance path having a feed end and a discharge end;

means for conveying a sheet along said path from the feed to the discharge end;

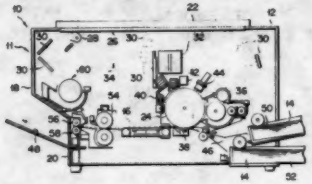
means for forming an image on said sheet as said sheet is conveyed along said path;

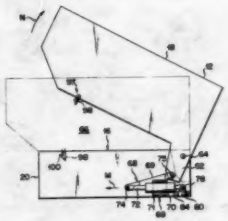
a first housing;

a second housing mating with said first housing at the level of said conveyance path, said conveyance means and forming means being disposed within said first and second housings;

an arm section extending from the first housing toward and onto the second housing and having a proximal portion and a free end portion;

coupling means, provided within the second housing and





mounted at one of said feed and discharge ends of said conveyance path, for rotatably coupling the proximal portion of the arm section to the second housing to support the first housing and for supporting the proximal portion of the arm section; and

urging means, provided on the second housing and coupled to the free end portion of the arm section, said urging means for applying a predetermined urging force to the free end portion of the arm section to maintain the first housing in a predetermined position in which a space for exposing the conveyance path is formed between the first and second housings, when the first housing is rotated about the coupled means by a predetermined angle with respect to the second housing.

4,641,948

METHOD OF AND DEVICE FOR PREVENTING DISTURBANCE OF UNFIXED VISIBLE IMAGE

Kimio Nakahata, Kawasaki; Tsutomu Toyono, Tokyo; Atsushi Takagi, Fujisawa, and Yoshinori Aguro, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 784,816, Apr. 5, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,952

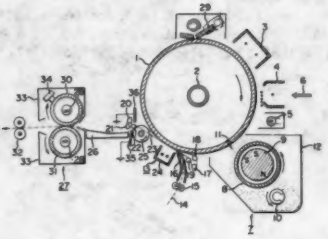
Claims priority, application Japan, Apr. 13, 1976, 51-41661

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—3 SH **19 Claims**

5. A device for preventing disturbance of an unfixed visible image in an image formation apparatus wherein an electrostatic image on an electrostatic image bearing member is developed into a visible image with a developer, thereafter the developed visible image is electrostatically transferred to a transfer medium in contact therewith at a transfer station and then the transfer medium is mechanically separated from and conveyed away from the image bearing member, said device comprising:

charge removing means having a plurality of distinct discharging portions which portions are disposed adjacent to but spaced from the transfer medium as the transfer medium is conveyed away from the image bearing member and past the charge removing means; and



means for maintaining said plurality of distinct discharging portions at a potential such as to create an electric field across the space between the transfer medium and said plurality of distinct discharging portions to electrically discharge the transfer medium and thereby prevent disturbance of the unfixed image on the transfer medium.

4,641,949

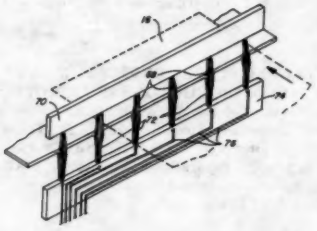
CONDUCTIVE BRUSH PAPER POSITION SENSOR

Stanley J. Wallace, Victor; Josef E. Jedlicka, and Wilbur M. Peck, Jr., both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1985, Ser. No. 769,515

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 SH **4 Claims**



1. A machine for reproducing an original document onto a sheet including:

a sheet supporting tray,

sheet feed means to forward a sheet from the tray through the reproducing machine for having a copy of the original created thereon,

optical means for projecting, along an optical path, a light pattern of a document to be reproduced,

support means for moving the document past one end of said optical path,

sensing means adjacent said document support means to sense the size of the document to be reproduced,

said sensing means including a first array of spaced discrete conductive fiber brushes and a second array of spaced discrete conductive fiber brushes oppositely disposed from the first array forming sensor pairs, each of the discrete conductive fiber brushes comprising polyacrylonitrile fibers in the range of 10 to 100 ohms resistance per bundle, the oppositely disposed conductive fiber sensor pairs normally being in electrical contact, the electrical contact of each pair being interrupted by the presence of a portion of a document between the sensor pair, and

circuit means for providing a signal indicative of the presence or lack of presence of a portion of a document between a selected sensor pair.

4,641,950

EXPOSURE SYSTEM

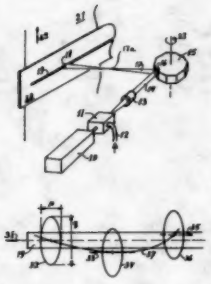
Josephus W. Rongen, Venlo, and Robertus van Cooten, Grubbenvorst, both of Netherlands, assignors to Océ-Nederland B. V., Venlo, Netherlands

Filed Oct. 1, 1984, Ser. No. 655,747

Claims priority, application Netherlands, Oct. 10, 1983, 8303470

Int. Cl.⁴ G03G *15/04*

U.S. Cl. 355—3 R **9 Claims**



1. In an exposure system for imagewise exposing a movable light-sensitive layer to at least one beam of light dot by dot along a line on said layer, including at least one light source, each for generating a beam of light, and means for modulating each said beam with electronic information, and wherein at least one said beam so modulated is subject to substantial deviation of its location perpendicularly relative to said line of exposure, the combination which comprises means disposed across the path of said modulated beam for blocking passage to said light-sensitive layer of portions of said modulated beam deviated perpendicularly away from said line of exposure and within said blocking means a narrow light transmitting slit extending parallel to said line of exposure, the width of said slit being less than 150 μm and so much less than the dimension at the slit of said modulated beam in the direction of the slit width that said slit passes to said layer only limited portions of said modulated beam which are substantially centered on said line.

4,641,951

METHOD AND APPARATUS FOR ELECTROPHOTOGRAPHICALLY REPRODUCING A DESIRED PORTION OF AN ORIGINAL ON COPYING PAPER

Tsuneo Takagi; Kenjiro Tanabe; Masao Fukushima; Hiroki Kyushima; Kiyoshi Takenaka; Akira Okada, and Yoshinor Isogaki, all of Shiga, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 18, 1985, Ser. No. 745,913

Claims priority, application Japan, Jun. 25, 1984, 59-131786

Int. Cl.⁴ G03G *15/00*

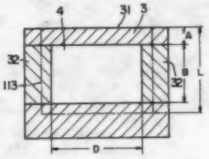
U.S. Cl. 355—7 **15 Claims**

1. A method for reproducing a desired portion of a pattern in an original onto a copying paper, comprising the steps of:

manually inputting information about the desired portion to means for computing reproduction information of the desired portion;

electrifying and deelectrifying a photo-conductive surface of a rotary drum in response to the computed reproduction information so that electrification only results on a surface area of the photo-conductive surface corresponding to the desired portion of the pattern in the original;

exposing the original so as to produce latent images on said photo-conductive surface corresponding to the desired portion;



developing the latent images with toner to produce toner images on the photo-conductive surface;

and transferring the toner images onto the copying paper so that only the desired portion is reproduced.

4,641,952

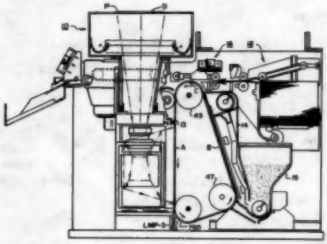
SELECTIVE DEVELOPMENT CONTROL FOR ELECTROSTATIC REPRODUCTION MACHINES

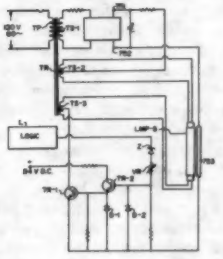
James M. Donohue, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 731,967, May 24, 1968, abandoned. This application May 19, 1971, Ser. No. 145,013

Int. Cl.⁴ G03G *15/02*

U.S. Cl. 355—14 R **3 Claims**





1. In an electrostatic reproduction machine having a moving photoconductive plate adapted to be uniformly charged, document illumination means for producing an electrostatic latent image thereon, means for activating and deactivating the illumination means periodically for producing a plurality of latent images during a reproduction run and developing means positioned at a development zone to develop the moving electrostatic image on the plate, the combination with

a discharge device adapted when activated to discharge a charged area on the plate when the area reaches a predete-

mined position in the travel, said device being positioned to discharge the charged area on the plate before the same enters the development zone,

a control circuit associated with said discharge device, said control circuit being arranged for activating the discharge device immediately after the illumination means has been deactivated for discharging portions of the charged areas and thereby inhibit development of these areas.

4,641,953

IMAGE FORMING APPARATUS

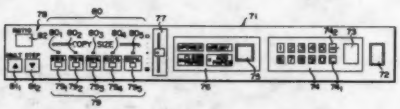
Hideshi Oushiden, Kawasaki, and Naoshi Obara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 30, 1984, Ser. No. 615,278

Claims priority, application Japan, May 31, 1983, 58-96124

Int. Cl.[4] G03G *15/00*; G03B *27/52*

U.S. Cl. 355—14 R 3 Claims



1. An image forming apparatus comprising:

an optical means for optically scanning a document and transmitting light beams from said document so as to form an optical image of said document;

magnification ratio setting means for setting a magnification ratio in size of said optical image with respect to said document; and

control means for controlling said optical means in such a manner that said optical image with said magnification ratio set by said magnification ratio setting means is projected on a photosensitive means;

wherein said magnification ratio setting means comprises a first magnification ratio setting means which includes at least one magnification ratio setting key for setting a specified magnification ratio, and a second magnification ratio setting means which includes a magnification ratio increasing key and a magnification ratio decreasing key;

when said magnification ratio increasing key or said magnification ratio decreasing key is operated continuously within a first period of time, said magnification ratio is increased or decreased by a first predetermined value of the magnification ratio, and when said magnification ratio increasing or decreasing key is operated continuously over said first period of time, said magnification ratio is increased or decreased by a second predetermined value of magnification ratio each unit time exceeding said first period of time; and

said control means controls said optical means in such a manner that an optical image having a magnification ratio set by using said first magnification ratio setting means, by using said second magnification ratio setting means or by using said first and second magnification ratio setting means, is projected on said photosensitive medium.

4,641,954

APPARATUS FOR FORMING AN IMAGE ON ONE SIDE OF A RECORD MEDIUM AND IN ANOTHER MODE TO FORM IMAGES ON BOTH SIDES THEREOF

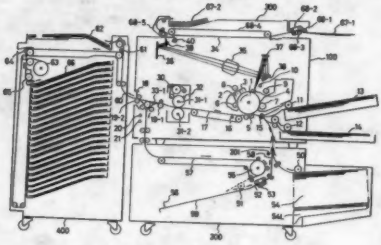
Masanori Miyata, Mitaka; Yutaka Komiya; Shinichi Nakamura, both of Tokyo; Masayuki Hirose, Yokohama; Hideki Adachi, and Masahiro Tomosada, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1984, Ser. No. 640,333

Claims priority, application Japan, Aug. 16, 1983, 58-148711

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R 10 Claims



1. An image forming apparatus comprising:

image forming means operable in a first mode for forming an image on one side of a record medium and a second mode for forming the images on both sides of the record medium;

command means for commanding an interrupting image formation in said second mode during the image formation in said second mode;

storage means capable of storing in a plurality of modes the record medium transported from said image forming means, which record medium has been subjected to the image formation; and

control means for controlling said storage means to store in a predetermined mode of said plurality of modes the record medium transported from said image forming means during the interrupting image formation, which record medium has been subjected to the image formation.

4,641,955

ION PROJECTION RECORDING APPARATUS

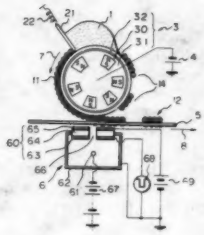
Kazuhiro Yuasa, Zama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 5, 1985, Ser. No. 795,099

Claims priority, application Japan, Nov. 5, 1984, 59-231241; Dec. 20, 1984, 59-267375

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—14 TR 15 Claims



1. A recording apparatus for recording an image by controlling streams of ions pixel by pixel, comprising:

toner charging and transporting means for charging toner to a first polarity, regulating the charged toner to form a toner layer having a predetermined thickness, and transporting the charged toner layer;

ion generating means for generating ions having a predetermined polarity positioned at a side opposite to the charged toner layer with respect to a transfer member which is fed such that a surface of the transfer member is located close to or in contact with the charged toner layer; and

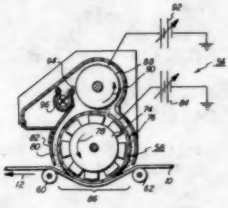
ion stream control means for controlling streams of the ions generated by said ion generating means pixel by pixel responsive to image data which are to be recorded, whereby the charged toner is selectively deposited on the transfer member due to coulomb force acting between the ions having the predetermined polarity and the charged toner.

4,641,956

EXTENDED NIP CLEANING SYSTEM

Donald A. Seanor, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1980, Ser. No. 180,791
Int. Cl.⁴ G03G *21/00*
U.S. Cl. 355—15 **20 Claims**



1. An apparatus for removing particles from a belt, including:

a tubular member;

means for attracting a cleaning material to said tubular member;

means for rotating said tubular member to transport the cleaning material into contact with the particles adhering to said belt; and

means for maintaining the belt at a pre-selected tension of sufficient magnitude so that the belt deflects about said tubular member to form an extended cleaning zone between said tubular member and the belt, said maintaining means tensioning said belt to a magnitude preferably of about 0.1 kilograms per linear centimeter.

4,641,957

OPTICAL MEMBER DRIVE SYSTEM FOR COPYING MACHINE

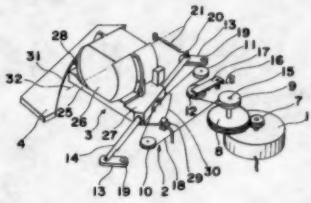
Katsuhiko Takeda, and Masamichi Sugiura, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 737,821, May 23, 1985, abandoned. This application Apr. 4, 1986, Ser. No. 848,683
Claims priority, application Japan, May 25, 1984, 59-107223
Int. Cl.⁴ G03B *27/36, 27/38*
U.S. Cl. 355—58 **20 Claims**

1. An optical member drive system for a copying machine or the like including a projector lens assembly movable along a predetermined path, which system comprises:

a drive unit for moving the lens assembly;

means for, when the lens assembly is moved along the predetermined path which is divided into a predetermined number of zones, setting a speed at any one of the zones to a value appropriate to the magnitude of a load acting on the drive unit; and



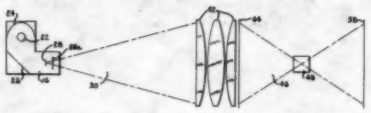
means for speed-controlling the drive unit in accordance with the speed set by said setting means.

4,641,958

SYSTEM AND METHOD FOR PROJECTING MULTIPLE IMAGES DIRECTLY ONTO PRINTING PLATES

Joseph H. Wally, 12302 W. 82nd Ter., Lenexa, Kans. 66215, and Samuel E. Wilson, 15412 W. 90th St., Lenexa, Kans. 66219

Filed Sep. 10, 1983, Ser. No. 531,203
Int. Cl.⁴ G03B *27/72*
U.S. Cl. 355—71 **20 Claims**



1. A method of transferring an image along an optical path to be printed directly onto a rigid printing plate having a photosensitive coating, said method comprising the steps of:

generating from a substantially point source a uniformly diverging beam of highly intense light having wavelengths restricted to a relatively narrow wavelength band;

limiting heat build-up in said optical path;

providing an objective lens;

passing said diverging beam of light through a condenser lens to obtain a converging beam which converges in the objective lens;

locating copy containing the image adjacent the condenser lens and in the path of the beam to project the film image;

focusing the converging beam on the objective lens; and

projecting the beam from the objective lens onto a preselected portion of the printing plate for sufficient time to expose the photosensitive coating, thereby providing the image on said preselected portion of the printing plate.

4,641,959

METHOD FOR DETERMINING EXPOSURE AMOUNT IN PHOTOGRAPHIC PRINTING

Takaaki Terashita, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 11, 1986, Ser. No. 828,374
Claims priority, application Japan, Feb. 27, 1985, 60-38526; Mar. 28, 1985, 60-62027; Apr. 8, 1985, 60-73795
Int. Cl.⁴ G03B *27/32, 27/80*
U.S. Cl. 355—77 **19 Claims**

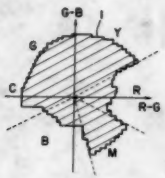
1. A method for determining exposure amount in photographic printing which comprises the steps of:

photometrically measuring either the whole or a part of a frame picture of an original film in divided fine segments;

obtaining a color coordinate from said photometric data;

determining whether said color coordinate exists in or outside of a region on a predetermined color coordinate;

obtaining a first color region data of said color coordinate inside said region and a second color region data of said color coordinate outside said region; and



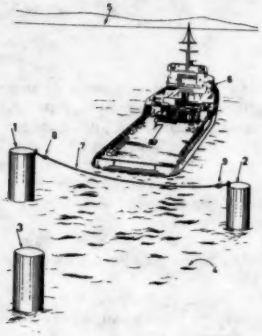
determining the exposure amount based upon a value obtained by respectively multiplying said first and second color region data with coefficients and sequentially adding the resulted products.

4,641,960

METHOD FOR THE STEREOPHOTOGRAMMETRIC SURVEY OF LARGE-DIMENSION OBJECTS ON SEA AND LAND

Giovanni Bozzolato, Segrate, Italy, assignor to AGIP, S.p.A., Rome, Italy

Filed May 31, 1984, Ser. No. 615,839
Claims priority, application Italy, Jun. 3, 1983, 21437 A/83
Int. Cl.[4] G01C *11/12, 3/14*
U.S. Cl. 356—2 **8 Claims**



1. A method for the stereophotogrammetric survey of large dimension objects situated on the sea comprising:

(i) providing two synchronized metric photographic cameras mounted apart from one another at a known distance of about 6 meters in parallel orientation at a distance of about 30 meters from the object to be surveyed;

(ii) providing an inextensible chain in full view of said cameras within the area to be surveyed, said chain having two reference markers mounted thereon at a known distance from each other, said markers being of sufficient size to be reliably visible on photograms taken from a distance of about 30 to 40 meters, the links of said chain also being of sufficient size to be visible on photograms taken from a distance of about 30 to 40 meters;

(iii) simultaneously photographing the object to be surveyed and said inextensible chain with said synchronized metric photographic cameras to provide two simultaneous photographs of the object and said chain;

(iv) obtaining a stereoscopic optical model of the object to be measured from said two simultaneous photographs by means of a stereoplotter;

(v) measuring on said stereoscopic optical model eight sets of points grouped in the eight conventional perimetral locations of photogrammetric orientation, one half of said points being situated at the crest level and the other half of said points being situated at the trough level of waves of the sea;

(vi) statistically processing said crest and trough measurements to determine the mean horizontal plane;

(vii) orientating said stereoscopic optical model on said mean horizontal plane by suitable rotation of said stereoscopic optical model;

(viii) measuring on said stereoscopic optical model in the photographic scale the length of the catenary arc between said two reference markers by summing the lengths of the small arc portions corresponding to each link of said chain;

(ix) determining the scale of said stereoscopic optical model by comparing said measured length of said catenary arc to the known distance between said reference markers on said inextensible chain; and

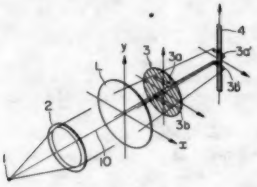
(x) calculating actual dimensions of the object by measuring linear distances on said stereoscopic optical model and converting said measured linear distances into actual object dimensions using said stereoscopic optical model scale.

4,641,961

APPARATUS FOR MEASURING THE OPTICAL CHARACTERISTICS OF AN OPTICAL SYSTEM TO BE EXAMINED

Kenji Yamada, Narashino, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,538
Claims priority, application Japan, Aug. 6, 1982, 57-136369
Int. Cl.[4] G01B *9/00*
U.S. Cl. 356—124 **28 Claims**



1. An apparatus for measuring the optical characteristics of an optical system to be examined, comprising:

(a) beam supply means for determining a reference optical axis and generating a light beam passed through said optical system to be examined along said reference optical axis;

(b) mask means for partly transmitting said light beam therethrough, said mask means having a pattern comprising at least one straight line disposed off said reference optical axis in said light beam, the straight line of said pattern extending in a predetermined direction in a plane substantially orthogonal to said reference optical axis;

(c) photosensitive detector means for receiving the light beam passed through said optical system to be examined and said mask means, said detector means being fixedly disposed relative to said mask means and having a substantial length in a direction substantially orthogonal to said pattern, said detector means producing an electrical signal indicative of the position of the pattern of said mask means projected onto said detector means in the direction of the length of said detector means;

(d) rotating means for providing relative rotation about said reference optical axis between said light beam passed

through said optical system to be examined and said mask means;

(e) means for processing said electrical signal and finding the refractive characteristic of said optical system to be examined; and

(f) optical means provided between said mask means and said detector means for making said mask means and said detector means conjugate in a plane parallel to the direction of the straight line of said pattern and said reference optical axis.

4,641,962

ABERRATION MEASURING METHOD

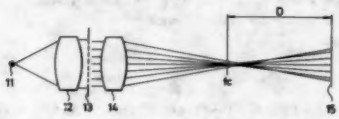
Tetsuo Sueda, Chofu, and Minoru Yoshii, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,208

Claims priority, application Japan, May 25, 1982, 57-88429

Int. Cl.⁴ G01B *9/00*

U.S. Cl. 356—124 **11 Claims**



1. An aberration measuring method comprising the steps of:

providing a light source at a regular projection image plane position of a lens to be examined and causing a light beam from the light source to enter the lens to be examined;

separating the light beam passed through the lens to be examined into a plurality of light rays which lie in at least one plane parallel to a principal ray or parallel to the optical axis of the lens to be examined, said separating step being performed at a position in the vicinity of the lens to be examined so as to pass the light rays at predetermined heights from the optical axis;

detecting the position of each light ray at a position which is spaced apart from a position optically conjugate with the image plane position with respect to the lens to be examined and at which the plurality of light rays can be separated from one another; and

measuring the aberration of the lens to be examined on the basis of the detected positions of the plurality of light rays.

4,641,963

BACK-ILLUMINATED CCD IMAGER ADAPTED FOR CONTRAST TRANSFER FUNCTION MEASUREMENTS THEREON

Peter A. Levine, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 2, 1985, Ser. No. 729,651

Int. Cl.⁴ G01M *11/00*; H01L *29/78, 27/14, 31/00*

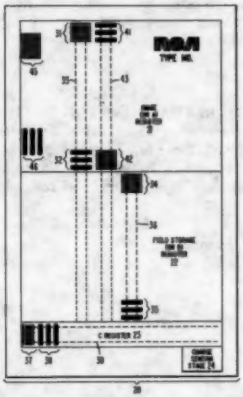
U.S. Cl. 356—124.5 **7 Claims**

1. A solid state imager of back-illuminated type, including a charge coupled device with gate electrodes disposed on a first surface of said imager opposite to a second surface thereof through which said imager receives back-illumination under normal circumstances and having a selectively opaque optical pattern disposed over the first surface of said imager, said pattern comprising at least one stripe pattern of specific spatial frequency overlying a charge transfer channel of said charge coupled device, said stripes cross the width of said charge transfer channel, and being arranged in combination with:

means providing illumination to said first surface of said solid state imager for causing a shadow of said selectively opaque optical pattern to form on said charge transfer channel;

means for applying clocking voltages to the said charge coupled device; and

means for utilizing the output signal from said imager, said output signal being responsive to the illumination of the first surface as selectively transmitted by said selectively



opaque optical pattern, for calculating the contrast transfer function of said charge transfer channel.

4,641,964

APPARATUS FOR MEASURING OPTICAL CHARACTERISTICS OF OPTICAL SYSTEMS

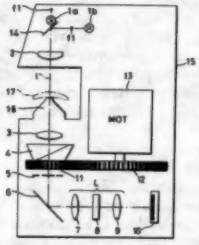
Kiyoharu Mitani, Kawasaki; Kazuo Morohashi, Tokyo; Kenji Yamada, Narashino; Tsunemi Gonda, Yamato, and Hideo Mizutani, Yokohama, all of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Jul. 20, 1984, Ser. No. 632,866

Claims priority, application Japan, Jul. 27, 1983, 58-137376

Int. Cl.⁴ G01B *9/00*

U.S. Cl. 356—124 **5 Claims**



1. An apparatus for measuring an optical characteristic of an optical system to be inspected, comprising:

(a) a converting optical system having a determined focal point and capable of converting a light beam diverging from said focal point into a parallel beam;

(b) light source means for selectively generating light from either one of two positions on the optical axis of said converting optical system;

(c) mask means positioned opposite to said light source means with respect to said converting optical system, wherein said mask means comprises a pattern composed of translucent and opaque areas, in which said pattern is symmetrical with respect to the optical axis of said converting optical system;

(d) means for placing said inspected optical system on the optical axis of said converting optical system in such a manner as to guide the light of said light source means from said converting optical system to said mask means;

(e) detecting means with a photoreceptor plane used for detecting the light intensity distribution on said photoreceptor plane; and

(f) an optical system for guiding the light from said light source means through said mask means to said photoreceptor plane.

4,641,965

IMMERSION REFRACTOMETER WITH ANGLE PRISM

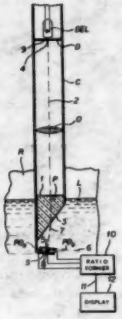
Alan L. Harmer, Plan Les Ouates, Switzerland, assignor to Stanley Electric Co. Ltd., Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,795

Claims priority, application Switzerland, Sep. 7, 1983, 4883/83

Int. Cl.[4] G01N *21/41*

U.S. Cl. 356—135 **8 Claims**



1. A refractometer comprising:

a tubular casing;

a prism disposed at one end of said casing and adapted to be immersed partially in a liquid whose index of refraction is to be measured;

a light source in said casing spaced from said prism;

a diaphragm in said casing between said light source and said prism and having an orifice passing a pencil of light;

lens means in the path of said pencil of light in said casing between said diaphragm and said prism for focusing an image of said orifice in a plane beyond said prism in said liquid; and

a double photodiode adapted to be immersed in said liquid having two coplanar discrete photodiodes forming a junction located in said plane substantially along an axis of refraction of said pencil for a given index of refraction of said liquid, said double photodiode having an output detected across both said discrete photodiodes, means being provided to establish a ratio between an output intensity of one of said discrete photodiodes and the intensity of said output of said double photodiode as a measure of the index of refraction of said liquid.

4,641,966

AUTOMATED INSPECTION SYSTEM

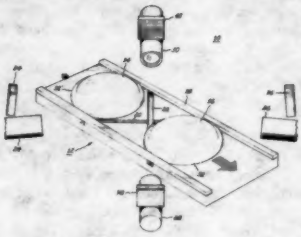
Robert E. Lemmers, Cleveland Heights; Frank Safran, Cortland, and Warren T. Brussee, Warren, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1985, Ser. No. 761,449

Int. Cl.[4] G01N *21/88*

U.S. Cl. 356—237 **18 Claims**

1. An automated inspection system to detect surface defects located at the bottom edge of an object which includes a detection station utilizing a flat horizontal surface containing a pair of slots aligned generally perpendicular with respect to each other, laser means projecting beams in opposite directions along the length of each slot at a slight angle to said horizontal surface so that a portion of each laser beam projects above said horizontal surface, transport means to move said object across said horizontal surface and over both slots, and photodetection



means positioned to intercept each of said laser beam patterns after contact with the bottom edge of the moving object, said laser beam patterns being altered by any surface defects existing thereat.

4,641,967

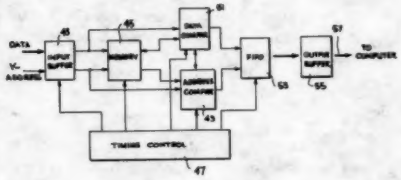
PARTICLE POSITION CORRELATOR AND CORRELATION METHOD FOR A SURFACE SCANNER

Jiri Pecen, Palo Alto, Calif., assignor to Tencor Instruments, Mountain View, Calif.

Filed Oct. 11, 1985, Ser. No. 786,620

Int. Cl.[4] G01N *21/00*

U.S. Cl. 356—237 **13 Claims**



1. A process of particle detection and position correlation comprising,

(a) scanning a first scan line on a surface with a laser beam having a characteristic beam width, scattering of said laser beam from said surface being detected when a scattering amplitude is above a threshold value, a Y-address of said scanning beam being generated during said scanning,

(b) storing data from said scanning of said first line, as previous data, said data identifying an address having a scan line number and a Y-address, said data also including scattering amplitude data at each said address,

(c) scanning a second line with said laser beam, said second scan line being spaced a distance less than the beam width from said first scan line, scattering of said beam again being detected, data from said scanning of said second line being stored as current data,

(d) comparing said current data with said previous data, current data that lack a corresponding previous datum with a matching Y-address being stored as previous data, said current data having a corresponding previous datum with a matching Y-address replacing said previous datum when said amplitude data of said current data has a value larger than that of said previous datum,

(e) sending previous data that lack a corresponding current datum with a matching Y-address to a computer storage, and

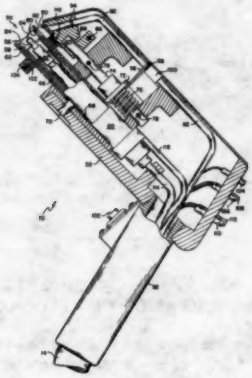
(f) repeating steps (c)–(e) for third, fourth and succeeding scan lines until the entire surface is scanned.

4,641,968

MOBILE SPECTROMETRIC APPARATUS

Mark E. Grandy, Maynard, Mass., assignor to Baird Corporation, Bedford, Mass.

Filed Dec. 17, 1984, Ser. No. 682,155
Int. Cl.[4] G01J 3/30
U.S. Cl. 356—313 10 Claims



1. Apparatus for the spectrometric analysis of metallic parts in an air gap comprising:

(a) a probe designed to be positioned on a metallic part and provided with means for vaporizing said part, said probe including means for spacing and positioning said probe on said part, said spacing determining said air gap, means for sensing radiation of metallic vapor vaporized by said vaporizing means, means to control the operation of said probe, and means for intermittently cleaning said sensing means;

(b) a mobile unit including excitation means for said probe, said excitation means designed to operate said probe in three modes: a preburn mode, a precision carbon analysis mode, and an all other elements save carbon anlysis mode, and computer means to control the operation of said excitation means; and

(c) a flexible optical cable coupling said probe to said mobile unit;

(d) said vaporizing means comprising an adjustable counter electrode, an inner sleeve serving as a contact electrode concentrically and fixedly mounted about said counter electrode, and an outer sleeve axially movable about said inner sleeve, said sleeves provided with windows, said windows being at least partly superimposed one over the other and adjacent said sensing means when said vaporizing means vaporizes said part;

(e) said spacing and positioning means for said probe on said part including said adjustable counter electrode and said sleeves, and a V-groove formed in said outer sleeve and designed to space and position round metallic parts, said round metallic parts having radii from about one mm to about one cm;

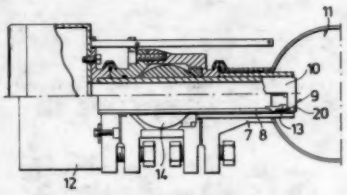
(f) said means to control the operation of said probe including a pair of switches, one of said pair of switches being actuable by an operator's finger and the other of said pair of switches being actuable by said spacing and positioning means.

4,641,969

METHOD AND APPARATUS FOR MEASURING THE CONTENT OF SUSPENDED SUBSTANCES IN A FLOWING MEDIUM

Krister Lundberg; Göran Tidstam, both of Säffle, Sweden, and Daniel F. Pope, Issaquah, Wash., assignors to AB Bonnierforetagen

PCT No. PCT/SE83/00458, § 371 Date Aug. 14, 1984, § 102(e) Date Aug. 14, 1984, PCT Pub. No. WO84/02396, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 15, 1983, Ser. No. 641,953
Claims priority, application Sweden, Dec. 15, 1982, 8207180
Int. Cl.[4] G01N 21/00
U.S. Cl. 356—343 14 Claims



1. A method for measuring the concentration of suspended particles in a flowing medium, comprising the steps of:

directing a beam of light from a light source into the medium for producing directly reflected light which comprises light reflected from that portion of the medium which is illuminated directly by the beam of light and for producing multiply reflected light which comprises light reflected from areas of the medium into which the beam of light has scattered;

intercepting the directly reflected light in a first light detector operable for producing a first electrical output having a magnitude which is substantially linearly related to the concentration of particles in the medium;

intercepting the multiply reflected light in a second light detector operable for producing a second electrical output having a generally constant magnitude in relation to the concentration of particles; and

producing a concentration level signal having a magnitude which is proportional to the ratio of the first electrical output divided by the second electrical output.

4,641,970

RING LASER LOCK-IN CORRECTION APPARATUS

Harry A. Gustafson, Minneapolis, Minn.; Wah L. Lim, Anaheim, Calif., and Francis H. Zeman, New Brighton, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 20, 1982, Ser. No. 419,874
Int. Cl.[4] G01B 9/02
U.S. Cl. 356—350 22 Claims

1. A lock-in error correction apparatus for an angular rate sensor of the class wherein two waves propagate in opposite directions along a closed-loop path, each of said waves having an intensity associated therewith which includes intensity variations related to the coupling of energy of each of said waves into the other along said closed-loop path, wherein the frequency of each of said waves and corresponding phase rate related to the phase difference between said waves is a function of the rate of rotation of said closed-loop path, and wherein associated with said sensor is a phase rate error related to said coupling of energy, the apparatus comprising:

phase rate biasing means having output means coupled to said sensor for altering said phase rate to provide a phase rate bias in response to at least a first compensation signal; and

phase rate error detection means having input means responsive to at least one of said waves for providing a first

compensation signal related to, at least in part, said phase rate error so as to direct said phase rate biasing means to produce said phase rate bias so as to have magnitude and sign which is substantially equal in magnitude, but opposite in sign, of said phase rate error.

4,641,971

WHITE LIGHT INTERFEROMETER

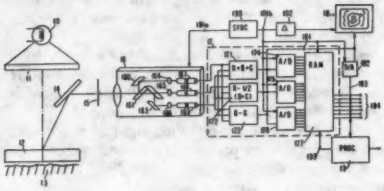
Hans-Erdmann Korth, Stuttgart, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1984, Ser. No. 676,952

Claims priority, application European Pat. Off., Dec. 27, 1983, 83113120.6

Int. Cl.[4] G01B *9/02*

U.S. Cl. 356—357 **9 Claims**



1. An optical interferometer comprising means for causing at least two white light beams to interfere, a color TV camera having R, G, B output signals corresponding respectively to the phase differences of the red, green and blue light of the interference field from the interfereing white light beams, and means for evaluating the R, G, B output signals, said evaluating means further comprising means for storing the R, G, B output signals or linear combinations thereof.

4,641,972

METHOD AND APPARATUS FOR SURFACE PROFILOMETRY

Maurice Halioua, Sea Cliff, N.Y., and Venugopal Srinivasan, Singapore, Singapore, assignors to New York Institute of Technology, Old Westbury, N.Y.

Filed Sep. 14, 1984, Ser. No. 650,824

Int. Cl.[4] G01B *11/24*

U.S. Cl. 356—376 **11 Claims**

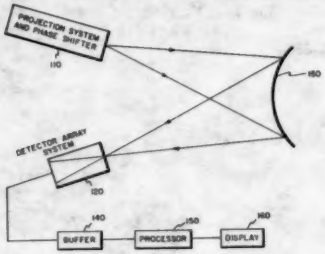
1. A method for determining the surface profile of an object, comprising the steps of:

directing at said object an incident beam of light having a sinusoidally varying intensity pattern;

modulating the phase of the sinusoidal intensity pattern of said incident beam;

receiving at a detector a deformed grating image of the object for a number of different modulated phases of said incident beam;

determining, for points on the surface of the object, the height at each said point with respect to a reference plane, each said height determination including the step of combining image intensity values, for said different modulated phases of the incident beam, at a detector position corresponding to a respective point of the object.



4,641,973

METHOD AND APPARATUS FOR MEASUREMENT OF THE CONCENTRATION OF A COMPONENT OF A MIXTURE

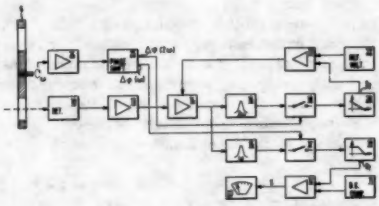
Volker Nestler, Hamburg, and Wolfgang Olsowski, Norderstedt, both of Fed. Rep. of Germany, assignors to H. Maihak AG, Hamburg, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,613

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137658

Int. Cl.[4] G01J *3/51*

U.S. Cl. 356—418 **7 Claims**



1. An apparatus for the measurement of the concentration of a substance capable of absorbing infrared, visible or ultraviolet radiation energy, the substance being in a mixture, comprising:

source means for generating a beam of radiant energy having predetermined spectral response characteristics;

chamber means for containing the mixture, said chamber means having windows transparent to the beam of radiant energy aligned with each other and said beam;

means serially connected in an optical path with said source means and said chamber means for modulating the beam at a predetermined frequency to form two sequential separate intervals of radiation, said means for modulating including a first filter for controlling the first one of the radiation intervals which first filter does one of selectively absorbing and transmitting energy in the spectral region of the absorption of the substance being measured, and a second filter for controlling the second one of the radiation intervals which second filter does not selectively absorb and does not selectively transmit energy in the spectral region of the absorption of the substance being measured and in the spectral region of interference components, and said means for modulating including means to create dark intervals between said first and second filters;

a wide-band detector at the end of said optical path for measuring the intensities of the radiation intervals after the beam has passed through the mixture to produce an output signal;

a series connected lens for focusing the radiant energy of the beam on said detector; and

circuit means connected to the output of said detector forming a signal representative of the concentration of the substance and for displaying the signal thus formed, said circuit means including phase shifter circuit means coupled to said means for modulating for producing reference output signals, amplifier means including a first variable gain amplifier for amplifying the output signal from said detector, first and second frequency selective filters connected to receive the output of said amplifier means and for passing portions thereof at selected frequencies, first and second phase rectifier means connected to receive the outputs of said phase shifter circuit means and the outputs of said first and second frequency selective filters for rectifying said outputs, a low-pass filter connected to receive the rectified signal from said first rectifier means, a first voltage reference source, a display amplifier having inputs connected to receive the outputs of said low-pass filter and said first voltage reference source, display means for displaying the output of said display amplifier, a second voltage reference source, an integrator circuit connected to receive the output of said second rectifier means, and a second variable gain amplifier having inputs connected to receive the outputs of said integrator circuit and said second voltage reference source and an output connected to control the gain of said first variable gain amplifier.

4,641,974

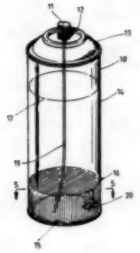
AEROSOL CAN AGITATOR

John E. Church, 2727 Fontana, Houston, Tex. 77043

Filed Mar. 22, 1985, Ser. No. 715,197

Int. Cl.[4] B01F *15/00*

U.S. Cl. 366—342 **19 Claims**



1. An aerosol can agitator comprising a post whose longitudinal axis lies in a first plane, and a plurality of prongs attached to and extending away from said post such that the longitudinal axes of said prongs lie in a second plane substantially perpendicular to said first plane and to said axis of said post, the length of said post and prongs being less than the diameter of the can in which said agitator is to be used so as to allow totally unpredictable orientation of said agitator in said can.

4,641,975

CLOCK WITH MECHANICAL DRIVE

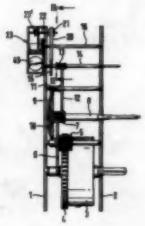
Rolf Hepfer, Bad Dürrheim, and Rudolf Kieninger, Aldingen, both of Fed. Rep. of Germany, assignors to Joseph Kieninger Uhrenfabrik GmbH, Fed. Rep. of Germany

Filed Mar. 10, 1986, Ser. No. 838,104

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1985, 3508637

Int. Cl.[4] G04C *3/00*

U.S. Cl. 368—124 **9 Claims**



1. A clock having a mechanical drive for driving a striking clock having a striking clock mechanism, said striking clock mechanism including a mechanical striking clock drive having a wheelwork, a going train connected to said striking wheelwork, a quartz controlled stepping mechanism having an arbor in drive connection with the wheelwork of said going train, an escapement connected between said wheelwork and said arbor, said escapement including means following each step of said arbor releasing the going train, said mechanical drive producing a torque acting on said means for driving it through a defined angle.

4,641,976

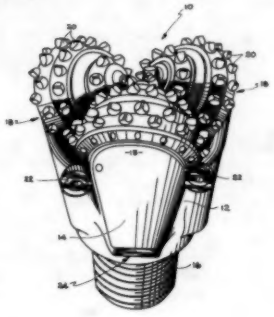
COPPER-BASED SPINODAL ALLOY BEARINGS

Nareshchrandra J. Kar, Westminster, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation of Ser. No. 578,398, Feb. 9, 1984, abandoned. This application Nov. 1, 1985, Ser. No. 794,358

Int. Cl.[4] E21B *10/22;* **F16C** *17/12, 33/12*

U.S. Cl. 384—95 **6 Claims**



1. A sealed bearing rotary cone rock bit comprising:

a rock bit body,

at least one leg depending from said body,

a journal shaft on said leg,

a roller cutter cone adapted to be rotatively secured to said journal shaft, and

bearing surfaces formed by said journal and said cone, one of said bearing surfaces having a corrosion resistant bearing material disposed thereon, said bearing material consisting

of copper-based spinodal alloys of about 38 Rockwell C hardness and having a tensile ductility of at least four percent, the other of said bearing surfaces being formed of a material harder than said spinodal alloys.

4,641,977

BEARING SYSTEM

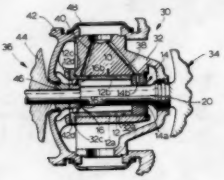
William E. Woollenweber, 3905 Cove Rd., Columbus, Ind. 47203

PCT No. PCT/US84/00439, § 371 Date Dec. 11, 1984, § 102(e) Date Dec. 11, 1984, PCT Pub. No. WO84/04141, PCT Pub. Date Oct. 25, 1984

PCT Filed Mar. 21, 1984, Ser. No. 711,245

Int. Cl.[4] F16C *21/00, 33/58*

U.S. Cl. 384—99 **26 Claims**



1. A bearing system for a rotating shaft, characterized in that said bearing system includes:

a full-floating sleeve bearing (**14**) having a bearing surface adapted to rotatably carry the rotating shaft (**20**) at one end of the bearing system,

an inner race (**16*a***) adapted to be fastened to the rotating shaft at the other end of the bearing system, and

an outer race (**12**) extending axially of the rotating shaft being adapted at said other end of the bearing system to cooperate with the inner race and a plurality of interposed rolling elements (**16*b***) and to form an anti-friction bearing at said other end of the bearing system, the inner surface (**12*b***) of the outer race (**12**) expanding from said one end to the other end and the outer surface (**12*a***) of the outer race (**12**) forming an elongated cylindrical bearing surface and radially extending thrust-bearing surfaces (**12*c*, 12*d***),

said sleeve bearing (**14**) including a passageway (**14*b***) permitting lubricating fluid to be introduced into the bearing system at the bearing surfaces of the sleeve bearing, said lubricating fluid introduced to the sleeve bearing and escaping therefrom being urged by rotation of the outer race to lubricate the rolling elements of the anti-friction rolling bearing.

4,641,978

BEARING SYSTEM

Davorin D. Kapich, Carlsbad, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 23, 1984, Ser. No. 663,857

Int. Cl.[4] F16C *17/20, 32/04*

U.S. Cl. 384—102 **11 Claims**

1. A bearing system for supporting a rotating shaft on a housing, the bearing system comprising:

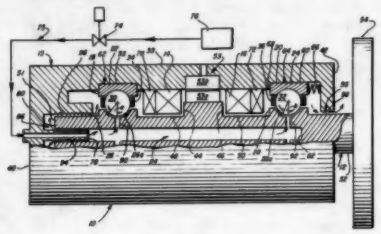
a pair of primary bearings and a pair of backup bearings,

each said backup bearing comprising an outer race supported on said housing, an inner race on said shaft, a plurality of rolling elements disposed between said races, and a retainer ring for constraining said rolling elements;

said primary bearings being operative to support said shaft during normal operation in a first predetermined position such that in each of said backup bearings said rolling elements contact only one of said races;

said backup bearings being configured so that upon axial displacement of said shaft in a predetermined direction from said first predetermined position to a second predetermined position said rolling elements in each bearing contact both races and said shaft is supported by said backup bearings; and

shaft displacement means for selectively applying axial force to said shaft to displaced said shaft from said first predeter-



mined position to said second predetermined position while said shaft rotates relative to said housing,

said shaft displacement means including a chamber defined by surfaces on said housing and said shaft and means for introducing high pressure fluid into said chamber.

4,641,979

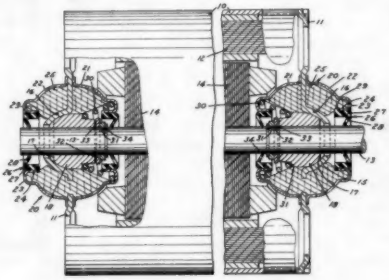
BEARING SYSTEM FOR FRACTIONAL HORSEPOWER ELECTRIC MOTORS

Thomas W. Stone, Owosso, Mich., assignor to Universal Electric Company, Owosso, Mich.

Filed Aug. 15, 1984, Ser. No. 640,980

Int. Cl.[4] F16C *25/04*

U.S. Cl. 384—146 **13 Claims**



1. A bearing system for fractional horsepower electric motors which comprises a shell supporting a stator, end members closing the ends of the shell, a shaft supporting a rotor within the stator and a bearing system on the end members rotatably supporting the shaft, said bearing system comprising

a bearing member on said shaft and having an outer end and an inner end,

said end member having a seat for engagement by the outer end of said bearing member,

spring means yieldingly urging the bearing member against the seat,

oil slinger means on said shaft adjacent the inner end of said bearing member,

oil retention means associated with said end member and

at least one inner seal adjacent one end of said rotor axially inwardly of said oil slinger means and having a radially inwardly extending deflectable lip for engaging the shaft and isolating the oil slinger means, oil retaining means and bearing with respect to the remainder of the shaft.

4,641,980

PRINTER WITH PIVOTABLE PRINT HEAD ATTACHED TO MEDIUM CARRIER MOVEABLE THROUGH A CASING OPENING

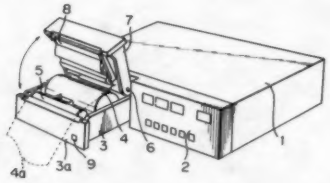
Norio Matsumoto; Shinya Okuda; Osamu Ohkuma, all of Kawasaki, and Mituyoshi Seino, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 2, 1985, Ser. No. 782,922

Claims priority, application Japan, Oct. 2, 1984, 59-206734; Oct. 2, 1984, 59-206735; Oct. 2, 1984, 59-206736; Nov. 30, 1984, 59-253754; Nov. 30, 1984, 59-253755

Int. Cl.[4] B41J *3/02*

U.S. Cl. 400—120 9 Claims



1. A printer, comprising:

a casing having a substantially cuboidal shape with an operation panel formed on a front face thereof;

a printing unit including

a printing medium-attaching portion, and

a printing head portion pivotably attached to the printing medium-attaching portion so that the printing head portion pivots between open and closed positions;

moving means for supporting said printing unit so that the printing unit can be drawn out from the front face of the casing, and for automatically positioning the printing head portion in the open position when the printing unit is drawn out from the casing; and

a control circuit for controlling the printing operation of the printing head portion.

4,641,981

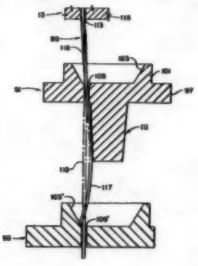
DOT MATRIX PRINT HEAD

James E. Blomquist, and Robert H. Wilczewski, both of 203 E. Main, Riverton, Wyo. 82501

Division of Ser. No. 616,792, Jun. 1, 1984, which is a division of Ser. No. 499,208, May 31, 1983, abandoned, which is a division of Ser. No. 425,255, Sep. 28, 1982, Pat. No. 4,401,392, which is a continuation of Ser. No. 256,032, Apr. 21, 1981, abandoned, which is a division of Ser. No. 38,724, May 14, 1979, Pat. No. 4,279,518. This application Feb. 26, 1986, Ser. No. 833,836

Int. Cl.[4] B41J *3/12;* B23P *19/04*

U.S. Cl. 400—124 3 Claims



1. A wire guide member for a dot matrix head, said wire guide member comprising:

a main body portion having a planar surface and a rim portion attached to and extending upwardly from said planar surface, said rim portion having a cam surface extending upwardly from said planar surface and outwardly of a first axis perpendicular to said planar surface, said cam surface intersecting said planar surface at a plurality of points forming a closed path, said wire guide member further including a plurality of holes through said main body portion, each of said holes extending along an axis substantially parallel to said first axis and being defined by at least a first surface, said first surface extending dowwardly from said planar surface and inwardly of the axis of the respective hole to form a truncated conical shape, said first surface being positioned adjaced said cam surface and intersecting said closed path whereby print wires being advanced toward said wire guide member can first contact said cam surface of said rim portion and then move slideably therealong into one of said holes.

4,641,982

HOUSING COVER FOR PRINTERS

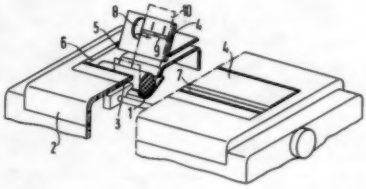
Rudolf Rekewitz, Waldstrasse 2a, D8190 Wolfratshausen, Fed. Rep. of Germany

Continuation of Ser. No. 472,754, Mar. 7, 1983, abandoned. This application Feb. 15, 1985, Ser. No. 701,665

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211757

Int. Cl.[4] B41J *29/08*

U.S. Cl. 400—690.1 13 Claims



1. A printer housing and cover for a printer having a platen area with a platen therein and a print head movable along the platen to imprint paper passing around the platen, said cover comprising a planar cover top surface overlying a top of said printer and having an opening above said platen area, a rearward opening between the printer housing and cover for entry of continuous paper, a paper exit slot in the cover above and towards the front of the platen area for exit of continuous paper and a cover top portion overlying the platen area, said cover top portion being connected to said cover by hinges, said cover and said hinges being disposed in a plane including said top surface, said hinges formed by lateral pins extending from said cover top portion and received in grooves in the sides of said openings so as to be forwardly and rearwardly translatable therein, said cover portion having a front edge defining a rear edge of the slot and being movable from a first position in said plane including said top surface substantially covering the platen area with the front edge of the cover top portion being spaced from portions of the cover to define the paper exit slot, the slot extending along the platen area and open to the top of the cover to a second position substantially uncovering the platen area for insertion of single sheets to the rear of the platen, the cover top portion in the second position having a portion projecting upwardly and rearwardly from the platen area and defining a paper guidance and support surface at the rear of the platen area for proper insertion of single sheet paper.

4,641,983

CLAMPING DEVICE FOR THE SEPARABLE CONNECTION OF TWO PROFILE SECTION PARTS

Marcel Strässle, Kirchberg, Switzerland, assignor to Syma Intercontinental AG, Kirchberg, Switzerland

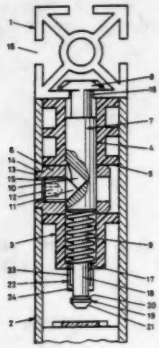
PCT No. PCT/CH83/00120, § 371 Date Jun. 1, 1984, § 102(e) Date Jun. 1, 1984, PCT Pub. No. WO84/01801, PCT Pub. Date May 10, 1984

PCT Filed Oct. 28, 1983, Ser. No. 619,466

Claims priority, application Switzerland, Nov. 1, 1982, 6346/82

Int. Cl.⁴ F16B *7/08, 9/00*

U.S. Cl. 403—12 **4 Claims**



1. In a clamping device for the separable connection of two profile section parts, an insertion core having a transverse bore and a rear part, said insertion core being located in one of the profile section parts, said other profile secton part having a longitudinal groove, an axially movable, spring-loaded retaining pin having a front end and a rear end and being supported within said insertion core for axial movement therein, said retaining pin including a T-shaped head at said front end engaged in said longitudinal groove in the other profile section part, a threaded bush mounted in said insertion core transverse bore, a lateral conical recess within said retaining pin, and a conically pointed screw, guided in said threaded bush, being in eccentrically displaced engagement in said lateral conical recess of the retaining pin in order to displace the latter axially, the improvement comprising retention means forming a disconnectable engagement of said rear end of said retaining pin **(7)** and said rear part of said insertion core **(3)**, and wherein said retention means comprises the rear end of the retaining pin having a rod **(18)** with a widened end part **(21)**, and wherein the rear part of the insertion core being provided with spreading fingers **23** extending longitudinally along opposing sides of said retaining pin and terminating in inward protruding followers **(24)** engaged with the rod behind the widened end part thereof.

4,641,984

TUBE COUPLER, PARTICULARLY SUITABLE FOR PLATFORM FOUNDATION PILES

Giuseppe Cianci, Milan, and Carlo Traverso, Rodano, both of Italy, assignors to 501 Saipem S.p.A., Milan, Italy

Filed Sep. 30, 1985, Ser. No. 782,069

Claims priority, application Italy, Oct. 11, 1984, 23113 A/84

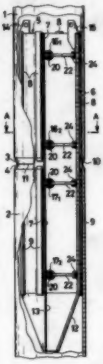
Int. Cl.⁴ B25G *3/00*; F16B *7/00*

U.S. Cl. 403—14 **1 Claim**

1. A coupler for aligning tube sections to be welded together, comprising:

(a) a tube piece having upper and lower sections with an outside diameter less than the inside diameter of the tube sections to be welded and a first longitudinal slot coextensive with the length of said tube piece having a width of about 1 decimeter;

(b) two pair of double-acting hydraulic cylinder piston units, each of said units being hinged at one end to the inner wall of said tube piece at a position opposite said longitudinal slot, the other end of said units being hinged to ends of two coplanar connecting rods, the other ends of said connecting rods being hinged to the inner wall of said tube piece on either side of said longitudinal slot;



(c) upper and lower sets of spacers positioned about the outer wall of said tube piece so as to provide a space between said tube piece and the tube sections to be welded; and

(d) a frusto-conical end piece attached to the lower section of said tube piece having a second longitudinal slot coextensive with the length of said end piece.

4,641,985

TEMPORARY EDGE TO EDGE SECUREMENT IN SPACE OF TWO PARTS

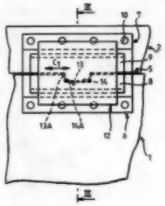
Max Bard, Cannes; Gérard Sibilo, Le Plan de Grasse; Georges Marello, Mandelieu; Daniel Viale, Fayence, and Michel Louis, Nice, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed May 31, 1985, Ser. No. 739,858

Claims priority, application France, Jun. 5, 1984, 84 08783

Int. Cl.⁴ F16B *1/04*

U.S. Cl. 403—16 **10 Claims**



1. A device for temporary edge to edge securement in space of two parts along a contacting surface comprising:

a plurality of retaining members distributed in pairs on either side of such contacting surface on each of said respective parts and a plurality of temporary connection members adapted to maintain said retaining members coupled to one another in each pair, with the retaining members in each pair being provided with complementary raised members for retainment thereof one relative to the other

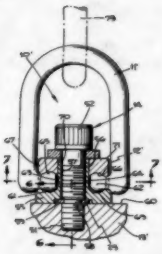
according to a longitudinal direction parallel to said contacting surface on each of said respective parts in at least one direction, said retaining members in each pair forming conjointly a bulging tenon oriented longitudinally engaging a narrowing groove formed in a rider constituting a temporary connection member of such pair of retaining members, and an automatic release mechanism comprising a coordination element connected to the plurality of temporary connection members and adapted to disengage the latter through relative longitudinal movement between said connection members and said plurality of retaining members under the action of an opening mechanism.

4,641,986

MULTI-POSITION EYEBOLT

Gary Tsui, Rosemead, and Thomas Heimbigner, Bellflower, both of Calif., assignors to CBC Industries, Inc., Los Angeles, Calif.

Filed Aug. 30, 1985, Ser. No. 771,351
Int. Cl.[4] F16G *15/08*
U.S. Cl. 403—164 **7 Claims**



7. A multi-position fixture for fixed attachment to a base, said fixture comprising a base-engaging anchor assembly, respective outer and inner interlock members having potential axial movement relative to each other to interlock positions, at least one of said interlock members having an operative swivel engagement with the anchor assembly and adapted to rotate throughout substantially a full circle, a ring member comprising a loop and a transversely disposed pivot pin structure having opposite elements respectively joined to said loop in a spaced relatively axial relationship with respect to each other, each said element having a captive relatively smaller end at a junction with the loop and a free relatively larger end, said interlock members including complementary retention means on respective diametrically opposite sides of the fixture, each said complementary retention means having opposite pin retention portions movable relative to each other to interlock engagement with the pivot pin structure whereby in operation the pivot pin structure is adapted to occupy a locked-in location between said interlock members during movement of said ring member throughout an arc of substantially a half circle for all full circle positions of rotation of said outer interlock member.

4,641,987

CLIP FOR SUSPENDED CEILING GRIDWORK

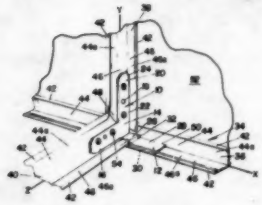
Gary R. Schlegel, 1449 Plymouth Ave., Irwin, Pa. 15642

Filed Jun. 28, 1985, Ser. No. 749,771
Int. Cl.[4] F16B *9/00*
U.S. Cl. 403—169 **3 Claims**

1. A clip assembly for connecting at least a first and a second L-shape member together in an angular disposition where at least said first L-shape member has an opened channel, comprising:

at least a first and a second prong disposed in an angular disposition relative to each other, corresponding to said angular disposition of said L-shape members,

said first prong having a stepped construction with a first and a second level where said first level has a widened surface area with a lip receivable in said opened channel of said first L-shape member whereby said widened surface area of said first prong is securable by a wedging action to



said first L-shape member in a supporting relationship thereof, and said second level of said first prong has an indented surface area with a width less in dimension than said first level of said first prong with surfaces overlying said second L-shape member,

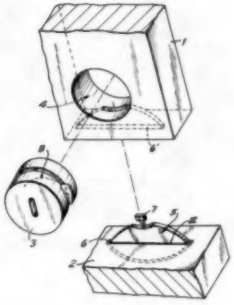
said second prong integrally connected to said first prong and securable to said second L-shape member in a supporting relationship thereof.

4,641,988

FITTING FOR RELEASABLY JOINING TWO STRUCTURAL COMPONENTS

Erwin Ganner, Weissenbachstrasse 21, A-6410 Telfs, Austria

PCT No. PCT/AT82/00022, § 371 Date Nov. 18, 1983, § 102(e) Date Nov. 18, 1983, PCT Pub. No. WO83/03287, PCT Pub. Date Sep. 29, 1983
PCT Filed Jul. 19, 1982, Ser. No. 563,383
Claims priority, application Austria, Mar. 18, 1982, 1076/82; May 18, 1982, 1961/82
Int. Cl.[4] B25G *3/00*; F16B *9/00*
U.S. Cl. 403—245 **12 Claims**



1. Fitting assembly for releasably joining furniture parts comprising a first and a second plate-shaped structural furniture component with said components extending at right angles to one another, said first and second components each having a pair of opposite surfaces and an edge surface extending transversely of the opposite surface, said first structure component having a bore therein extending at least from one opposite surface toward the other opposite surface and spaced fromthe edge surface of said first structural component, an axially extending cylindrical locking element fitted into the bore in said first structural component and being rotatable in said bore about the axis of said locking element, said second

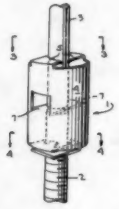
structural component having a slot formed in only one of the pair of opposite surfaces and edge surface, a holding piece fixedly secured in the slot formed in the surface of said second structural component and said holding piece projecting perpendicularly outwardly from the surface containing the slot, said holding piece having a holding projection thereon on the part of said holding piece projecting outwardly from said second structural component, the edge surface of said first structural component has a slot formed therein and extending inwardly from the edge surface thereof and being open to the bore in said first structural component, said locking element has at least one gripping surface thereon, said holding piece being insertable into the slot in the edge surface of said first structural component with said holding projection extending into the cross-section of said bore in said first structural component, said locking element being rotatable within said bore so that said at least one gripping surface thereon engages said holding projection and pulls said holding piece into the slot in said first structural component toward the locking element, and said holding piece is a disc-like member having a pair of opposite flat sides and an edge surface defining the boundary of said flat sides and with said holding projection extending outwardly from said edge surface thereof in the direction extending perpendicularly to the surface in which the disc-like member is secured in said second structural component, said slots in said first and second structural components having flat side surface, and said flat sides of said holding piece being disposed in generally parallel relation with the sides of said slots.

4,641,989

PIPE HANGER EXTENSION CLIP

Frank J. Maddi, Somerset, N.J., assignor to Joule' Inc., Orange, N.J.

Filed Feb. 13, 1986, Ser. No. 828,907
Int. Cl.[4] F16D *1/00*
U.S. Cl. 403—302 **10 Claims**



1. An improved extension clip for connecting a smooth rod to a threaded rod comprising:

a hollow body with rod engaging clinch ears positioned at one end of said body,

thread forming means at an opposite end of said body; and

stop means positioned within the body intermediate said clinch ears and said thread forming means for positioning said smooth rod and said threaded rod;

said body having a pair of said clinch ears; and

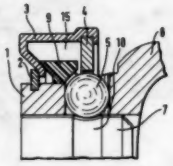
each clinch ear having an angled end portion including a V-notch.

4,641,990

DRIVELINE COUPLING WITH SAFETY INTERLOCK MECHANISM LATCHABLE IN THE OPEN POSITION

Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 21, 1986, Ser. No. 842,544
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1985, 3511577
Int. Cl.[4] F16B *7/00*
U.S. Cl. 403—317 **4 Claims**



1. A coupling assembly including a lock latchable in the unlocked position particularly for connecting a universal shaft for driving an agricultural implement with a power takeoff shaft of a tractor comprising:

a coupling sleeve having an axial bore defined therein adapted to receive in torque transmitting engagement a power takeoff shaft having an annular grove formed therein;

radial apertures defined in said coupling sleeve;

locking members received in said radial apertures for engaging in an annular groove formed in a power takeoff shaft received in said axial bore for effecting locked engagement between said power takeoff shaft and said coupling sleeve;

said coupling sleeve being adapted to be brought into locked engagement with a power takeoff shaft by movement relative thereto in a slip-on direction and to be brought into an unlocked position by movement in an opposite direction;

a lock ring engaging about said locking members to hold said coupling assembly in locked engagement;

a gripping sleeve connected with said lock ring;

a resilient spring washer having an axial slit formed therein enabling said spring washer to expand and contract radially;

a first conical face formed on the side of said spring washer mating with a first complementary conical face formed on said gripping sleeve;

a second conical face on said spring washer on the side thereof opposite said first conical face mating with a second complementary conical face formed on said coupling sleeve;

a cylindrical seating face formed on said coupling sleeve adjacent said second complementary conical face; and

a cylindrical inner bore formed on said spring washer adapted to seat on said cylindrical seating face when said washer is radially expanded by being urged by said gripping sleeve against said second complementary conical face to place said coupling assembly in an arrested unlocked position.

4,641,991

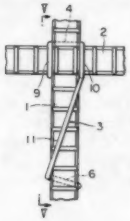
CONNECTOR FOR REINFORCING RODS

Yūhei Yaoita, No. 75, Oaza Hataya, Nishikawa-machi, Nishi-Kanbara-gun, Niigata-ken, Japan

Filed Jun. 28, 1985, Ser. No. 750,702
Claims priority, application Japan, Jun. 29, 1984, 59-98777[U]
Int. Cl.[4] B25G *3/36*; E04G *7/00*
U.S. Cl. 403—397 **3 Claims**

1. A wire connector for mutually perpendicular reinforcing rods, comprising: an elongated resilient wire member having a

laterally extending upper portion which is substantially U-shaped in plan view and defines a first space that is open along the front lateral side thereof whereby a first reinforcing rod can extend upwardly through said first space so that its rear side bears against the bight of said U-shaped upper portion, a pair of substantially parallel feet portions extending downwardly from the free ends of the legs of said U-shaped upper portion, said feet portions being curved in a rearward direction as they extend downwardly to define a second space that opens rearwardly whereby a second reinforcing rod positioned in front of and extending at a right angle to said first reinforcing rod can be engaged by said feet portions and pressed against the front side of said first reinforcing rod, said wire member having a middle portion that extends downwardly from the lower end of one of said feet portions on one side of said first



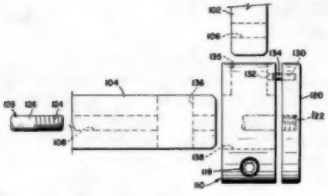
space and also extends obliquely toward the opposite side of said first space as it extends downwardly whereby said middle portion is adapted to extend in front of and across said second reinforcing rod below said feet portions of said wire member, said wire member having a lower portion extending laterally from the lower end of said middle portion, said lower portion being substantially U-shaped in plan view and defining a third space that is longitudinally aligned with said first space and also is open along the front lateral side thereof, said middle portion of said wire member being resiliently deformable whereby said lower portion can be moved to contact the rear side of said first reinforcing rod so that said first reinforcing rod extends upwardly through said third space and said lower portion urges said first reinforcing rod so that it extends perpendicularly to said second reinforcing rod.

4,641,992

ROD JOINT

Anthony F. Patroni, Margate, N.J., assignor to Boardwalk Regency Corporation, Atlantic City, N.J., a part interest

Filed Apr. 1, 1986, Ser. No. 846,855
Int. Cl.[4] B25G *3/08*
U.S. Cl. 403—382 **2 Claims**



1. In a joint for connecting an arm to a shaft wherein the shaft has a longitudinal bore and a transverse passage therethrough intersecting the longitudinal bore and an end portion of the arm engaging in the transverse passage in the shaft and a hole therethrough registering with the longitudinal bore of the shaft and an assembly bolt disposed in the longitudinal bore of the shaft and extending through the hole in the arm, the improvement which comprises:

a split collar having an axial bore therethrough engaging over the shaft and a radial bore registering with the transverse passage through the shaft and accommodating the arm,

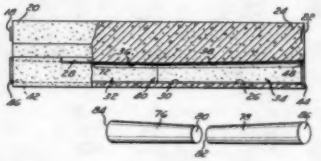
means for drawing the collar tightly against the arm, and means for clamping the collar around the shaft.

4,641,993

HIGHWAY BARRIER WITH LEVEL INTERNAL DUCTS AND CONSTRUCTION METHOD

Walter B. Hahne, Corona Del Mar, Calif., assignor to Associated Concrete Products, Santa Ana, Calif.

Continuation-in-part of Ser. No. 607,429, May 7, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 787,083
Int. Cl.[4] E01C *11/22*; E01F *13/00*
U.S. Cl. 404—4 **3 Claims**



1. A method for forming a roadway barrier section having a duct therein comprising the steps of:

placing a first frusto-conically shaped mold plug in a concrete form;

placing a second frusto-conically shaped mold plug in the concrete form;

positioning the first and second mold plugs end to end with the smaller end of each plug abutting each other;

aligning one frusto-conical side of the first plug with one frusto-conical side of the second plug to form a continuous mold for the duct, said aligned sides defining a substantially straight line the entire length of the duct, for forming a duct which has one side, which when the barrier is in use is disposed as the bottom of the duct, defining a substantially straight line, the top side of the duct defining a center portion which is smaller than the end portions of the duct;

pouring concrete into said form;

allowing the concrete to cure; and

removing the first and second mold plugs from the concrete.

4,641,994

PARKING GUIDE

Paul M. Hankison, 106 Oakwood Rd., McMurray, Pa. 15137

Filed Jan. 24, 1985, Ser. No. 694,586
Int. Cl.[4] E01F *13/00*
U.S. Cl. 404—6 **9 Claims**

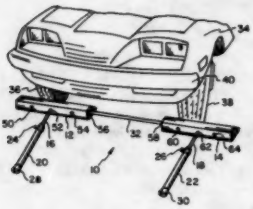
1. A parking guide for positioning a vehicle having at least two wheels thereon a predetermined distance from a boundary, comprising:

first and second incline means each having a first surface abutting a spacing means, a second surface abutting one of two extension means, and an inclined surface thereon, said first surface having an inset therein and said second surface having a plurality of insets therein;

wherein said spacing means connects said first and second incline means at a predetermined distance in a line; and

wherein said two extension means is a first and second extension means attached to said first and second incline means and extending generally horizontally and generally perpendicularly from said line formed by said incline means

and said spacing means, said extension means being adapted to abut against a solid boundary whereby said incline means are positioned a predetermined distance from said boundary.



4,641,995

USER-MOUNTED CONCRETE SCREED

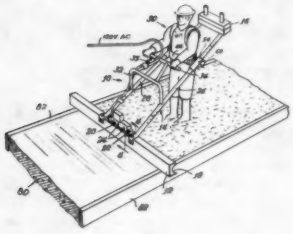
Joe M. Owens, 842 Lake Holiday Dr., Sandwich, Ill. 60548

Continuation-in-part of Ser. No. 690,733, Jan. 11, 1985, Pat. No. 4,591,271. This application Aug. 30, 1985, Ser. No. 771,494

The portion of the term of this patent subsequent to May 27, 2003, has been disclaimed.

Int. Cl.[4] F01C *19/22*

U.S. Cl. 404—118 **16 Claims**



1. A portable screed for working concrete as the screed is moved across the concrete, the screed being configured to be mounted on and piloted by a human being, comprising

a. a screed plate for working concrete,

b. means to impart vibrations to the screed plate for tamping and leveling the concrete,

c. an elongated frame,

d. means pivotally connecting one end of said frame to said screed plate,

e. a body harness connected to said frame intermediate the ends thereof, and

f. balancing means connected to said frame for positioning the center of gravity of said screed at the vicinity of the connection of said harness to said frame, said balancing means including a weight attached to said frame adjacent the end thereof opposite to said screed plate such that said weight counterbalances said screed to thereby so position said center of gravity.

4,641,996

SIDE LOADING BOAT LIFTS

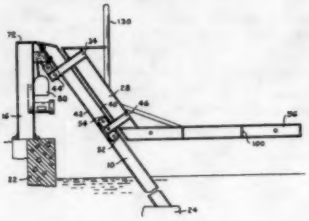
Morton Seal, Rte. 1, Box 483-C, Fort Myers, Fla. 33905

Filed Sep. 20, 1984, Ser. No. 652,265

Int. Cl.[4] B63C *3/04, 3/08*

U.S. Cl. 405—2 **9 Claims**

1. A side loading boat lift comprising a plurality of fixed longitudinally spaced masts, a cooperating rail fixed to each of the masts and extending at an angle into the water, a boat carrier slidably mounted on each of the rails, a horizontal boat supporting extension secured to each of the boat carriers to underlie and engage the keel of the boat to be lifted, a cable winch housing having a winch secured to each of the masts, a housing having a pulley interposed between each of the masts and its associated rail to rigidify the construction and to position the rails at a predetermined angular relation to the masts,



a yoke having a pulley secured to the boat carriers and extending to the space between the masts and the rails, a cable fixed to the housing and extending over the pulleys journalled in the boat carrier yoke and the housing and extending to the winch to elevate and lower the boat carriers relative to the rails to elevate the boat out of the water or to lower it into the water.

4,641,997

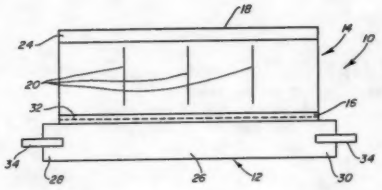
SYNTHETIC SEAWEED KIT AND SYNTHETIC SEAWEED MATRIX FORMED THEREBY

John F. Lauer, 627 Lincoln Dr., Twin Lakes, Wis. 53181; Ronald Greenberg, 4135 Hudson Dr., Hoffman Estates, Ill. 60195, and Raymond A. Van De Walle, 10365 Deerlove Rd., Glenview, Ill. 60025

Continuation-in-part of Ser. No. 448,375, Dec. 27, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 702,501

Int. Cl.[4] E02B *3/04*

U.S. Cl. 405—24 **8 Claims**



1. A synthetic seaweed kit comprising:

a. A plurality of synthetic seaweed units, wherein each seaweed unit is constructed of flexible, woven, high density polyethylene material slit into ribbons, woven to form a base material and coated with a low density polyethylene material with the various layers bonded together through melting, which is stitched in such a way as to create a cylindrical tube at its base having a first and second end, one of which is stitched closed, the remainder of the flexible material extends outwardly from said cylindrical tube and terminates at a free-end portion which includes closed pockets containing buoyant material;

b. At least one opening spaced from said free-end portions; and

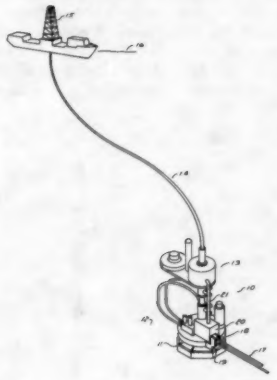
c. A plurality of means for interconnecting each said synthetic seaweed unit to at least two other synthetic seaweed units to form a grid.

4,641,998

UNDERWATER CONNECTION APPARATUS

Benton F. Baugh, 14626 Oak Bend, Houston, Tex. 77079

Filed Aug. 1, 1985, Ser. No. 761,617
Int. Cl.[4] E21B *43/01*
U.S. Cl. 405—169 10 Claims



1. In a subsea system for the production of oil or gas from subsurface formations or the injection of liquids or gases into subsurface formations, a subsea system for landing and securing ocean floor flowlines to said system, comprising

a flowline receiving structure having two side plates which are spaced apart, a first circular hole in each side plate on a first centerline, and a circular projection on each side plate about said first centerline;

a flowline end connection suitable for attaching directly to the flowlines before the flowlines are lowered into the water including a first spring loaded pin on each side of the flowline end connection on a second centerline with said second centerline being at right angles to the centerline of said flowlines, a funnel shaped means with a cylindrical stop surface at the bottom of said funnel shaped area on each side of said flowline end connection with said cylindrical stop surface about said second centerline, and circular fixed pin members on each side of said flowline end connection for attachment of pulling tool means also about said second centerline;

a pulling tool means with a guidance nose means including attachment means for engaging said circular fixed pin members and a connection to a wire rope or the such like, a receptacle means for receiving and positioning said guidance nose means, and a wire rope means which can be tensioned to pull said guidance nose means toward and into said receptacle means;

said attachment means including cylinder assemblies about a third centerline with a piston means with a rod portion with a recess, a spring to urge said piston means to an extended position, and a piston area to retract said piston to a retracted position when pressured; said recess fitting over said circular fixed pin members in said extended position and retracted away from said circular fixed pin members in said retracted position such that when said guidance nose means is attached to said flowline end connection said third centerline is concurrent with said second centerline;

said pulling tool means provides alignment means for said guidance nose means as said guidance nose means is pulled into said receptacle means including a key member and a guidance diameter on said guidance nose and a helical cam and a roller guidance diameter formed by rollers on said receptacle means such that when said guidance nose means is drawn into said receptacle means by said wire rope said key member works with said helical cam and said guidance diameter works with said roller guidance diameter such that said third centerline and therefore said second centerline is brought into a concurrent position with said first centerline as said funnel shaped means and said cylindrical stop surface engages said circular projection allowing said first spring loaded pins to engage said first circular holes in said side plates thereby providing a fixed connection between said flowline receiving structure and said flowline end connection which can be made at varying angles of said flowlines and still allows a vertical angular degree of freedom for said flowlines;

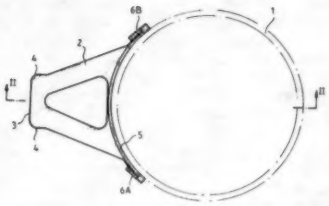
said side plates each also having a second circular hole about a fourth centerline parallel but spaced apart a fixed distance from said first centerline and said flowline end connection having a second spring loaded pin members on each side of the flowline end connection on a fifth centerline parallel but spaced apart said fixed distance from said second centerline such that when said flowline end connection is brought to the horizontal elevation, said second spring loaded pin members will engage said second circular holes and lock said flowline end connection and therefore said flowlines from vertical movement.

4,641,999

MEANS FOR PROTECTING SUPPORT STRUCTURES OR SIMILAR FROM SHOCKS

Gergely Korbuly, Chatou, France, assignor to Hutchinson SA, Paris, France

Filed Oct. 26, 1984, Ser. No. 664,962
Claims priority, application France, Oct. 28, 1983, 83 17321
Int. Cl.[4] E02B *3/22*
U.S. Cl. 405—215 7 Claims



1. An alongside fender for protecting a curved support structure against shocks applied thereto, comprising:

a frame which is curved and has a conforming radius substantially equal to the radius of said curved support structure;

a shock absorbing rubber member firmly secured to said frame; and

detachable fixing means positioned on opposite sides of said frame for securing said frame to said support structure, said fixing means comprising:

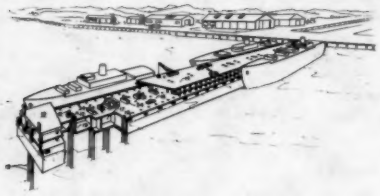
a first and second member which are fixed to said support structure and to said frame, respectively, and

interconnecting means allowing these members to cooperate as a fixing means, namely locking said frame in position on said support structure.

4,642,000
ANCHORING SYSTEM FOR CONCRETE FLOATING PIER

Tung Y. Lin, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 22, 1985, Ser. No. 757,402
Int. Cl.[4] E02B *3/20, 17/00*; B63B *21/00*
U.S. Cl. 405—221 **9 Claims**



1. An anchoring system for a floating pier, the combination comprising:

a. a section of floating pier including deck areas and a plurality of enclosed buoyancy compartments for providing floatation thereof;

b. a plurality of rectangular wet cell compartments located along the centerline of said pier section with the longitudinal dimension of said compartment perpendicular to the pier centerline; said wet cell compartments being fully open to the sea at the bottom thereof;

c. the top of each of said wet cell compartments including opening means located in said pier deck areas for the installation and operation of pier anchoring means;

d. pier anchoring means installed in each of said wet cell compartments for anchoring said section of floating pier to the seafloor against horizontal forces while allowing said section of floating pier to rise and lower with the tide and also to remain level during lateral displacement thereof; said pier anchoring means comprising a pair of spaced apart vertical piles which glide vertically within pile guide means mounted in each of said wet cell compartments; the pile spacing of said pair of vertical piles being at least three pile diameters apart to avoid pile group effect; said pile guide means include a plurality of impact force absorbtion pads with glide plates on their outer surface which slide along said vertical piles; metal rubbing plates being mounted vertically along the outside of said vertical piles against which respective glide plates on said absorption pads slide;

e. said wet cell compartments allowing space for bending motions of said pier anchoring means when said floating pier section moves against horizontal forces;

wherein, said floating pier anchoring system provides effective anchoring for withstanding lateral displacements caused by seismic loads and maximum static loads due to high winds and currents.

4,642,001
SPADE DRILL WITH REPLACEABLE CUTTING-INSERT CARRIER

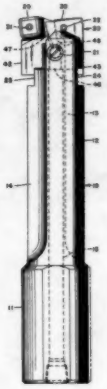
Geoffrey Y. Gill, Rte. #3, Box #140, Hart, Mich. 49420; Paul H. Hunter, 2356 Norcrest, Muskegon, Mich. 49441, and Gerard W. Venlet, 2140 Lakeridge Dr., Holland, Mich. 49423

Filed Oct. 31, 1983, Ser. No. 547,469
Int. Cl.[4] B23B *27/10*
U.S. Cl. 408—59 **1 Claim**

1. A drilling tool comprising:

a cantilever holder having axial chip grooves formed by surfaces extending along opposite sides thereof, said holder having a diametral recess across the end thereof, said holder also having a mounting portion establishing an axis of rotation;

a blade body receivable in said recess, and having abutments engageable with surfaces on said holder transverse to said groove surfaces to position said body laterally with respect to said holder, said body having receptacles for receiving cutting inserts, said receptacles being disposed to position said cutting inserts at locations on opposite sides of said axis of rotation and eccentric with respect to each other about said axis, one of said receptacles being disposed to position a cutting insert to cut to the said axis of rotation, and said receptacles establish cutting insert positions wherein the cutting edges of said inserts are



parallel to each other and inclined to said axis of rotation; and

cross-pin means interengageable with said blade body and holder to maintain the assembled relationship thereof, said holder having a central axial bore providing a coolant passage extending to said recess, and said blade body having a transverse hole receiving said cross-pin means, a first passage terminating at said hole and communicating with said coolant passage of said holder and extension passages terminating at said transverse hole and disposed to deliver coolant to positions adjacent said receptacles, said cross-pin means intersecting said transverse hole with clearance providing for coolant flow around said cross-pin means.

4,642,002
HOLDER FOR MOTOR DRIVEN TOOLS

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to REMS-WERK Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

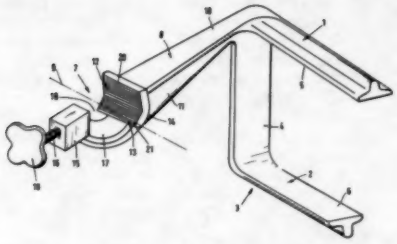
Filed Dec. 9, 1983, Ser. No. 559,914
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245894
Int. Cl.[4] B23G *1/24*
U.S. Cl. 408—105 **26 Claims**

1. A holder for a motor-driven tool, especially a motor-driven thread-cutting diestock, comprising:

support means for supporting said tool against reaction torque which occurs during operation of said tool;

a clamping device which is rigidly provided on said holder and is adapted to be fastened onto a workpiece which is to be handled; said clamping device having an axis which determines the position of said workpiece while allowing movement of the tool along said axis relative to the support means; said clamping device being open transverse to said axis as an aid during insertion of said workpiece therewith; said support means being connected to said

clamping device, said clamping device and support means being rigidly connected with respect to each other; and



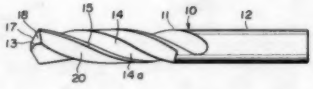
a spindle fixed to and movable relative to said clamping device for effecting fastening of the latter onto said workpiece.

4,642,003

ROTARY CUTTING TOOL OF CEMENTED CARBIDE

Hironori Yoshimura, Tokyo, Japan, assignor to Mitsubishi Kinzoku Kabushiki Kaisha, Japan

Filed Aug. 22, 1984, Ser. No. 643,278
Claims priority, application Japan, Aug. 24, 1983, 58-130600
Int. Cl.[4] B23C *51/16*; B23P *15/34*
U.S. Cl. 408—144 **6 Claims**



1. A rotary cutting tool, which comprises:

an elongated solid body, the solid body being composed of cemented carbide and containing cobalt, the elongated body including an interior portion containing cobalt and an exterior surface, the exterior surface including a relatively cobalt-rich unground surface portion and relatively cobalt-poor ground surface portions, the cobalt-rich unground surface portion having a cobalt content that is greater than the cobalt content of the cobalt-poor ground surface portions and the cobalt content of the interior portion;

the elongated body having opposite first and second ends and including a shank portion formed at the first end, a cutting portion formed at the second end and including a relief surface and a cutting edge formed on the relief surface, and an intermediate portion interposed between the first and second ends and having at least one flute formed therein and at least one land adjacent the flute, the cobalt-poor ground surface portions of the elongated body being situated at the shank portion, land and relief surface of the elongated body, the cobalt-rich unground surface portion of the elongated body being situated at the flute of the elongated body.

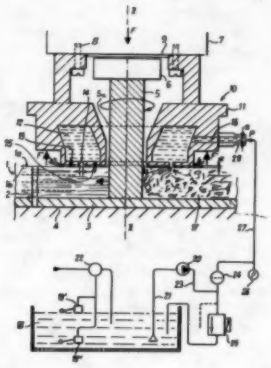
4,642,004

MACHINING DEVICE PROVIDED WITH A BLANK-PRESS CONNECTED TO THE TOOL AND BLANK-PRESS FOR SUCH A DEVICE

René Matifas, Albert, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Sep. 6, 1985, Ser. No. 773,293
Claims priority, application France, Sep. 12, 1984, 84 13995
Int. Cl.[4] B23C *5/28, 3/12*
U.S. Cl. 409—136 **5 Claims**

1. In a device for machining a workpiece by means of a rotating tool mounted in a tool-holder and attacking said workpiece with a lateral machining surface, said device comprising means for imparting a movement of relative displacement between said workpiece and said tool-holder, as well as a blank-press connected to said tool-holder and exerting a local pressure on a flat face of said workpiece in the vicinity of that part thereof being machined, said blank-press being provided with an annular chamber surrounding said tool and obturated opposite said workpiece by a flat face traversed by a plurality of orifices of predetermined diameter; said annular chamber



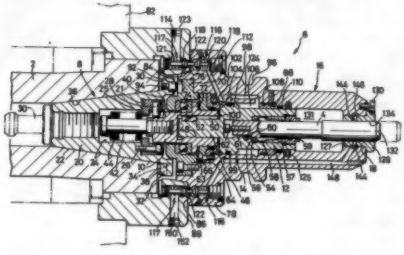
comprising means for connection to a source of fluid under pressure, said means for connecting the chamber to the source of fluid causing a resistance in the fluid passing therethrough; and said fluid emerging from the annular chamber through said orifices creating in the interface space between the flat face of the workpiece and the flat face of the annular chamber a fluid film for lift, said orifices causing a resistance to said fluid passing through said orifices, and said fluid film for lift encountering a resistance as said fluid film escapes laterally from the interface space.

4,642,005

HOLDER FOR ROTARY CUTTING TOOLS

Kunio Kondo; Katutoshi Haga; Minoru Haga; Yasuo Kato, and Shinobu Kaneko, all of Toyota, Japan, assignors to Fuji Seiko Limited and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Sep. 6, 1984, Ser. No. 647,889
Claims priority, application Japan, Sep. 14, 1983, 58-170456
Int. Cl.[4] B23C *5/26*
U.S. Cl. 409—232 **16 Claims**



1. A tool holder for holding a rotary cutting tool, attachable to a spindle of a machine tool for rotary cutting movement of the cutting tool, said spindle having a longitudinal axis about

which it is rotatable, and said machine tool having a substantially stationary body, the holder comprising:

a holder body fixed to the spindle for rotation therewith about the axis of the spindle;

a rotatable shaft disposed concentrically with said holder body and having a tool-mounting portion at one end thereof to hold said cutting tool, said rotatable shaft being coupled at the other end portion thereof to said holder body for receiving torque from said holder body, said rotatable shaft being axially and radially displaceable and inclinable relative to said holder body;

a positioning member fixedly disposed on the machine tool body radially outwardly of said spindle;

a casing disposed radially outwardly of and rotatably engaged with said rotatable shaft such that said casing and said shaft are rotatable relative to each other, said casing being engageable with said positioning member for accurate positioning thereof by the positioning member, thereby flexibly connecting said rotatable shaft to said holder body while simultaneously accurately positioning said rotatable shaft with respect to said machine tool body when said holder body is fixed to said spindle; and

a guide bushing fixedly supported at one axial end portion of said casing remote from said holder body, said guide bushing having a bore engageable with an outer circumferential surface of a guide portion of said cutting tool held by said tool-mounting portion of said rotatable shaft, for rotatably guiding the cutting tool.

4,642,006

TOOL MOUNTING

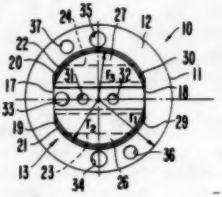
Sven A. O. Wirfelt, N.-Liebersbach, Fed. Rep. of Germany, assignor to Santrade Limited, Lucerne, Switzerland

Filed May 20, 1985, Ser. No. 735,763

Claims priority, application Sweden, May 25, 1984, 8402831

Int. Cl.[4] B23C *7/00*; B23B *43/00*

U.S. Cl. 409—233 **21 Claims**



1. A tool assembly comprising

(1) a tool element for carrying a cutter and including

(1A) an annular tap projecting longitudinally outwardly from an end of said tool element, said tap defining a first longitudinal axis and including a pair of radially spaced projections defining therebetween a through-hole having an axis extending radially with respect to said longitudinal axis, said hole being open in a longitudinally outward direction by means of a slot formed between longitudinally outer ends of said projections, said hole including first cam surface means oriented to produce radially outward separation of said projections when acted upon in a longitudinally outward direction, said projections carrying circumferentially aligned radially outwardly facing centering surface means extending coaxially about said first longitudinal axis, and

(1B) first positioning surface means,

(2) a housing,

(3) a tightening mechanism mounted in said housing for tightly securing said tool element, said tightening mechanism comprising:

(3A) a rotary spindle mounted in said housing for rotation about a second longitudinal axis, said rotary spindle including wall means forming an annular socket which is coaxial with said second axis and open at one longitudinal end thereof, said socket sized to longitudinally receive said tap, said wall means including annular guiding surface means facing radially inwardly and arranged coaxially with respect to said second longitudinal axis at a radial spacing corresponding to that of said centering surface means,

(3B) a drawbar mounted within said socket for longitudinal reciprocable movement relative to said wall means and constrained against rotational movement relative to said wall means, said drawbar including a head at an end thereof facing said open end of said socket, said head configured to be radially received in said hole of said tap, said drawbar being movable longitudinally to a tool exchange position in which said head positions said tap completely longitudinally outside of said housing such that no portion of said housing overlies said tap in any radial direction, said drawbar carrying:

(3Bi) second positioning surface means engageable with said first positioning surface means when said first and second longitudinal axes are mutually aligned, to resist further radial movement between said tap and said head, and

(3Bii) second cam surface means engageable with said first cam surface means to spread said projections radially apart, and

(3C) means for reciprocating said drawbar and tool element between:

(3Ci) a tool securing position within said socket such that said second cam surface means acts against said first cam surface means to pull said tap longitudinally within said socket while urging said projections radially outwardly to press said centering surface means firmly against said guiding surface means for mutually aligning said first and second longitudinal axes, and

(3cii) said tool exchange position wherein said head and tap are situated longitudinally completely outside of said housing for radial exchange, and

(4) a gripping element movable in a radial direction toward and away from said head when said head is in said tool exchange position, said gripping element including means for gripping said tap for selectively moving said tap radially onto and from said head.

14. A tool securing apparatus for securing a tool element of the type comprising a longitudinally extending, radially expandable annular tap having a radially extending hole therein, said tightening apparatus comprising:

(1) a housing,

(2) a rotary spindle mounted within said housing for rotation about a longitudinal axis, said spindle including an annular socket open at a longitudinal end thereof for receiving said tap of said tool element, said socket defined by an annular wall which includes a pair of longitudinally spaced, annular guiding surfaces oriented coaxially relative to said longitudinal axis, one of said guiding surfaces disposed closer to said open end of said socket and having a larger radius than the other guiding surface,

(3) a drawbar mounted in said socket for longitudinal reciprocable movement therein relative to said wall, said drawbar constrained against rotation relative to said wall, said drawbar including a head disposed at a front end thereof, said head sized for entry within said hole of said tap in a direction which is radial relative to said axis, said head including:

(3A) cam means for engaging and expanding said tap radially outwardly in response to movement of said drawbar in a longitudinally inward direction tending to pull said tap into said socket, and

(3B) positioning means engageable with positioning means on said tap for defining therewith yieldable positioning means for yieldably positioning said tap in alignment with said longitudinal axis, and

(4) means for reciprocating said drawbar between

(4A) a tool securing position within said socket such that said cam means pulls said tap longitudinally within said socket while expanding said tap radially outwardly into firm engagement with said guiding surface means, and

(4B) a tool exchange position wherein said head and tap are disposed completely longitudinally outside of said housing to permit radial exchange of said tool element.

18. Tool element of the type which is to be secured within a rotary spindle by means of a drawbar which pulls the tool element into a socket of the spindle after the tool element has been mounted on the drawbar by a gripping member, said tool element comprising an annular tap projecting longitudinally outwardly from an end of said tool element, said tap defining a longitudinal axis and including a pair of radially spaced projections defining therebetween a through-hole having an axis extending radially with respect to said longitudinal axis, said hole being open in a longitudinally outward direction by means of a slot formed between longitudinally outer ends of said projections, said hole including cam surface means oriented to produce radially outward separation of said projections when acted upon in a longitudinally outward direction by said drawbar, said projections carrying first and second centering surfaces, said centering surfaces facing radially outwardly and each comprising circumferentially aligned surface portions on said projections, said first and second centering surfaces being longitudinally spaced along said tap and having first and second radii, respectively, the one of said centering surfaces disposed closer to a longitudinally outer end of said tap having a smaller radius than the other centering surface, said tap including a radially outwardly facing groove by which said tap may be engaged by a gripping member to be inserted onto or removed from said drawbar, said tap including positioning means engageable with corresponding positioning means on said drawbar when said tap reaches a predetermined position thereon for resisting further radial movement of said tap.

4,642,007

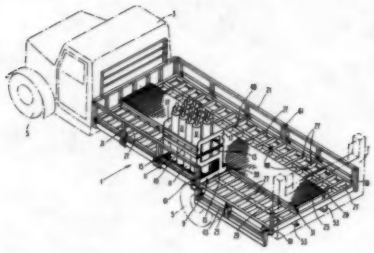
PALLETIZED CYLINDER DISTRIBUTION SYSTEM

Michael S. Marshall, Shoemakersville, and Vernon R. Ingham, Phoenixville, both of Pa., assignors to MG Industries, Valley Forge, Pa.

Filed Mar. 29, 1985, Ser. No. 717,852

Int. Cl.[4] B62D *23/00*

U.S. Cl. 410—78 **5 Claims**



4. Apparatus for transportation and distribution of a plurality of gas cylinders, comprising:

(a) at least two pallets, each of the pallets having a base, each of the pallets being capable of holding at least two gas cylinders on a surface defined by the base, and

(b) a network of cross members, the network comprising support means for the pallets, the network being affixed to a vehicle,

(c) the network defining a path which is raised relative to the remaindero f the network, the network being capable of holding pallets on both sides of the path, the path being distinct from any of the pallets,

(d) the pallets being open on one side, the open side being adjacent the path,

(e) the base of the pallets being of sufficient height that the surface of the pallets, on which the cylinders rest, is substantially level with the path.

4,642,008

EXPANSION DOWEL

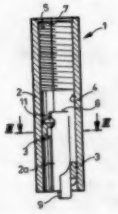
Armin Herb, Peissenberg, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft

Filed Jul. 8, 1985, Ser. No. 752,917

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1984, 3425237

Int. Cl.[4] F16B *13/04*

U.S. Cl. 411—16 **7 Claims**



1. Expansion dowel comprising an axially elongated sleeve-shaped dowel body having a leading end for insertion first into a borehole and a trailing end, said dowel body forming a bore extending between the leading and trailing ends thereof, said dowel body having axially extending slits therein extending from the leading end toward the trailing end, an expansion element located in the bore in said dowel body in the axially extending region of said slits, said dowel body being radially expandale by displacing said expansion elements in the axial direction of said body toward the leading end thereof, said expansion element is a spirally shaped member with the spiral axis thereof extending in the axial direction of said dowel body and said spirally shaped member having a pitch whereby the pitch of said spirally shaped member decreases when said spirally shaped member is axially displaced toward the leading end and results in an increase in the radially outer diameter thereof for radially expanding said dowel body, said spirally shaped member comprises two spirally shaped parts each having a wound section extending for approximately one-half of the circumference of the dowel body bore with the pitch of said wound sections oriented oppositely to one another.

6. Expansion dowel comprising an axially elongated sleeve-shaped dowel body having a leading end for insertion first into a borehole and a trailing end, said dowel body forming a bore extending between the leading and trailing ends thereof, said dowel body having axially extending slits therein extending from the leading end toward the trailing end, an expansion element located in the bore in said dowel body in the axially extending region of said slits, said dowel body being radially expandable by displacing said expansion element in the axial direction of said body toward the leading end thereof, said expansion element is a spirally shaped member with the spiral axis thereof extending in the axial direction of said dowel body and said spirally shaped member having a pitch whereby the pitch of said spirally shaped member decreases when said spirally shaped member is axially displaced toward the leading end and results in an increase in the radially outer diameter thereof for radially expanding said dowel body, said spirally shaped body comprises a web section connecting the leading end of said dowel body to said spirally shaped body, and a wound section extending from said web within the dowel body bore toward the trailing end of said dowel body for an axial length less than the full length of said body.

4,642,009

WALL PLUG

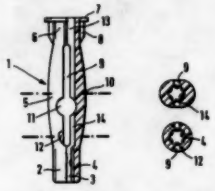
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3/Tumlingen, Fed. Rep. of Germany

Filed Jul. 10, 1985, Ser. No. 753,675

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1984, 3426994

Int. Cl.[4] A16B *13/04*

U.S. Cl. 411—38 **9 Claims**



1. A wall plug for fastening articles to building materials, comprising: a first end part having a longitudinal bore, said longitudinal bore of said first end part being provided with internal threading means which receives in assembly a fastening screw; a second end part having a longitudinal bore and provided with means for preventing rotation of the plug during fastening; two non-flat limbs each having a smooth outer surface and extending at one end from said first end part and connected at another end to said second end part, said limbs having two facing surfaces separated by a slot, and a central region having an elliptical cross-sectional profile which has a major and a minor diameter and which gradually becomes circular towards said first end part and said second end part, said slot having a width substantially corresponding to the difference between said major and minor diameters of said elliptical cross-sectional profile, said facing surfaces of said limbs being provided with longitudinal ribs; and means forming a weakened cross-section in said central region of said limbs, whereby the wall plug can be used for fastening articles to hollow building materials such as panels and hollow walls wherein, upon screwing of said fastening bolt into the plug, said limbs are forced to buckle radially outwards and fold axially of the plug and for fastening articles in solid building materials wherein upon screwing of said fastening bolt into the plug, said two limbs are compressed together causing said facing surface to touch in said central region.

4,642,010

THREADED FASTENER AND METHOD OF INSTALLING SAME

William D. Bradley, Welwyn Garden City; Zia R. Alvi, Hatfield, and Raymond D. Lacey, Essendon, all of England, assignors to Avdel Limited, Welwyn Garden City, England

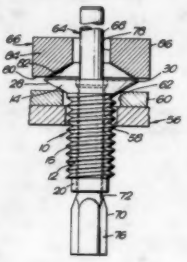
Filed May 24, 1984, Ser. No. 613,731

Claims priority, application United Kingdom, Jun. 1, 1983, 8315077

Int. Cl.[4] F16B *13/06, 35/00*

U.S. Cl. 411—69 **8 Claims**

1. A threaded fastener formed of ductile material, and comprising an elongate, circumferentially entire, tubular shank, and a radially enlarged head at one end of the shank, and having a bore throughout the shank and the head, said bore having a substantially constant diameter throughout the shank and being enlarged within the head by a counterbore, the shank being capable of undergoing radial ductile expansion throughout its length and thus of being deformed to a stable configuration having a diameter greater than that of the shank before expansion, the shank having a cylindrical tail portion remote from the head, and a threaded part between the tail-portion and the head, the threaded part being formed with an external screw-thread having a sharp crest, and said cylindrical



tail portion being unthreaded and having an external diameter less than the major diameter of the threaded part.

4,642,011

COMPOSITION FOR RUST PREVENTION OF METALS AND THREADED METAL ELEMENTS WITH A RUSTPROOF FILM

Yoshihito Uramoto, Tokai; Takasi Kaneko, Toyoake, and Toshiro Hirose, Nagoya, all of Japan, assignors to Toacosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,331

Claims priority, application Japan, Nov. 22, 1982, 57-203758; Dec. 28, 1982, 57-227789

Int. Cl.[4] F16B *39/22*

U.S. Cl. 411—258 **19 Claims**

1. A threaded metal element having coated thereon a film of reaction product between (a) an organic silicon compound having at least one aminoalkyl group and at least one alkoxy group and (b) a compound having at least one oxirane ring.

4,642,012

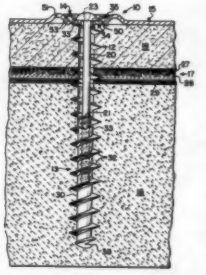
FASTENING ASSEMBLY FOR ROOFS OF SOFT MATERIAL

William J. Blucher, Addison; Richard J. Ernst, Palatine, and Francis C. Peterson, St. Charles, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed May 11, 1984, Ser. No. 609,160

Int. Cl.[4] F16B *35/04*

U.S. Cl. 411—371 **3 Claims**



1. An anchoring element comprising a generally cylindrical body having a thread thereon defining a crest diameter and a root diameter, said crest diameter being generally twice as large as said root diameter, and a bore in one end of said body adapted to receive a screw therein, said body including an integrally molded flange at one end thereof, said bore including three sections of differing diameters, a first of said three

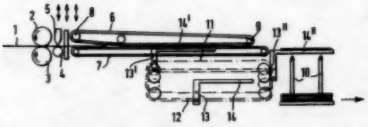
sections adapted to receive a screw head, a second section of lesser diameter than said first section, and a third section of lesser diameter than said second section.

4,642,013

APPARATUS FOR STACKING FLAT ARTICLES

Friedhelm Mundus, and Fritz Achelpohl, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 371,498, Apr. 23, 1982, abandoned. This application Nov. 25, 1985, Ser. No. 800,913
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116400; May 13, 1981, 3119004
Int. Cl.[4] B65G *57/04*
U.S. Cl. 414—73 **16 Claims**



16. An apparatus for stacking flat articles, said apparatus comprising:

a first conveying means for transporting flat articles towards one end,

a second conveying means for receiving a stacked plurality of flat articles and moving said stacked plurality of flat articles,

a carrying arm for transferring said flat articles from said one end and depositing said flat articles on said second conveying means in a stacked condition,

a retaining arm lowerable from a position above the carrying arm to a position compressing the stacked plurality of flat articles on said second conveying means,

means for moving said retaining arm along the conveying path of said second conveying means while compressing the stack of flat articles and returning said retaining arm to said position above the carrying arm,

a recess defined in a rear area of said retaining arm,

a supporting arm,

means for moving said supporting arm over the stacked plurality of flat articles compressed by the retaining arm to engage said recess defined by said retaining arm, and

means defined by said supporting arm for holding an article transferred by said carrying arm to the plurality of stacked articles compressed by the retaining arm to subsequently deposit said article on the second conveying means after the retaining arm and the stack of flat articles have been moved by the second conveying means.

4,642,014

FRAMING SYSTEM

Kari Saarinen, Säkylä , Finland, assignor to Lännen Tehtaat Oy, Iso-Vimma, Finland

Filed Mar. 26, 1985, Ser. No. 716,168
Claims priority, application Finland, Mar. 27, 1984, 841212
Int. Cl.[4] A01G *9/02*; B65G *57/30*
U.S. Cl. 414—96 **18 Claims**

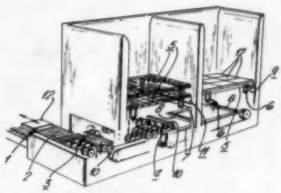
1. A method of filling pallets with plant pot cassettes comprising the steps of:

conveying a predetermined number of plant pot cassettes horizontally along a roll conveyor to a first location;

before said conveying step, feeding pallets individually into position at said first location such that upper portions of rolls of said roll conveyor protrude through holes in said bottom portion of the pallet;

loading the conveyed cassettes onto the positioned pallet by lowering the roll conveyor relative to the positioned pallet;

stacking the loaded pallet by shifting said loaded pallet into a stack such that it becomes a lowermost member of the stack; and



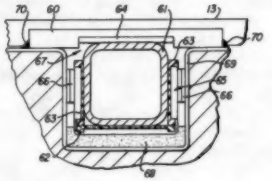
during said stacking step, providing spaces between bottom portions of the stacked pallets with spacer members provided along edges of each pallet, whereby plants in the cassettes of the stacked pallets may grow within the space provided between said stacked pallets.

4,642,015

BEARING SUPPORT FOR DISCHARGER MECHANISM

Anthony W. Hooper, Montreal, Canada; Alexander D. Cormack, Marietta, Ga., and Pierre Marchand, Rock Forrest, Canada, assignors to Uniweld Inc., Sherbrooke, Canada

Filed Jun. 15, 1984, Ser. No. 621,259
Int. Cl.[4] B65G *25/04*
U.S. Cl. 414—325 **3 Claims**



1. A discharger mechanism for discharging solid material from the underside of a pile disposed on the floor of a hopper, said discharger mechanism comprising,

a stoker rod having a rectangular cross section disposed in a trough in the floor of the hopper,

a plurality of stoker cross bars rigidly attached at the centers thereof to said stoker rod and being substantially equispaced along the length of the rod,

reciprocating means for longitudinally reciprocating said stoker rod,

at least one generally U-shaped bearing retainer disposed in said trough extending beneath said stoker rod and along the sides of said stoker rod,

bearing means comprising a plurality of sheets of plastic polymeric material removably disposed on each of said U-shaped bearing retainers, said plurality of sheets comprising separate plastic sheets being in contact with the bottom surface and each of the side faces of said stoker rod respectively,

at least one hold down bearing means each including a separate sheet of plastic polymeric material disposed on top of the upper surface of the stoker rod to prevent said stoker rod from lifting and

grout disposed between said bearing retainer and the trough in the floor of the hopper across the bottom and portions of the side walls of said bearing retainer to retain said

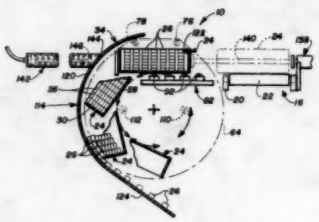
bearing retainer in a fixed position in said trough and to maintain said stoker cross bars in spaced relation to the floor of the hopper.

4,642,016

APPARATUS FOR UNLOADING NUCLEAR FUEL PELLETS FROM A SINTERING BOAT

George D. Bucher, McCondles, Pa., and Theodore E. Raymond, Sandy Run, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 3, 1984, Ser. No. 637,371
Int. Cl.[4] B65G *65/34*
U.S. Cl. 414—421 **10 Claims**



4. Apparatus for unloading nuclear fuel pellets from a loaded sintering boat having an open top, comprising:

(a) means for receiving said boat in an upright position with said pellets contained therein, said boat receiving means including a platform for supporting said loaded boat in said upright position, said boat supporting platform having first and second portions;

(b) means for clamping said boat including a pair of plates disposed at lateral sides of said boat and being movable in a first direction relative to one another for applying clamping forces to said boat on said platform and in a second direction relative to one another for releasing said clamping forces from said boat, said pair of plates having inner surfaces facing toward one another, said first and second platform portions of said boat supporting platform being mounted to said plates on said respective facing surfaces thereof and disposed in a common plane, one of said plates and the one of said platform portions mounted thereto being disposed in a stationary position and the other of said plates and the other of said platform portions mounted thereto being movable relative thereto in said first and second directions for applying and releasing clamping forces to and from said boat while said boat is supported in said upright position by said platform portions;

(c) means for transferring said clamped boat from said upright position to an inverted position and then back to said upright position; and

(d) means for receiving said pellets from said clamped boat as said boat is being transferred from said upright position to said inverted position.

4,642,017

AUTOMATED IN-PROCESS PIPE STORAGE AND RETRIEVAL SYSTEM

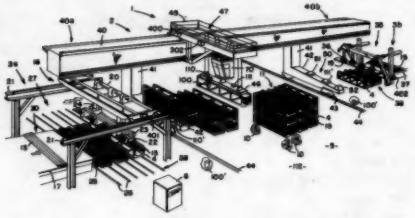
Ronald L. Fenn, Hudson, Ohio, assignor to AMCA International Corporation, Hanover, N.H.

Filed Sep. 30, 1982, Ser. No. 430,746
Int. Cl.[4] B65G *1/10*
U.S. Cl. 414—348 **13 Claims**

1. An automated material storage and retrieval system comprising:

a material loading means adapted to load material into a container at a first location to facilitate such storage at a secondary location; a storage/retrieval means for moving the container from the said first location to the said second location; and computer means for coordinating movement of the material loading means and said storage/retrieval means; said material loading means comprising transport means for transporting elongate members between said material loading means and respective containers, and guide means for aligning one end of such elongate members to facilitate transfer to the transport means, said computer means including means for storing in said memory information of the center of gravity of such elongate members, and means for controlling positioning of said containers for the transferring of elongate members with respect to said material loading means with at least approximate alignment of the centers of gravity of respective containers and elongate members.

9. An automated material storage and retrieval system, comprising a computer means adapted to control the system, said means including a memory; a storage/retrieval crane operable



in a storage yard for storing material; the system further including a plurality of containers, each being capable of containing material for storage in the storage yard; and material loading means for at least one of loading and/or unloading the material with respect to said containers; said computer means including means for coordinating said storage/retrieval crane and said loading means; said storage retrieval crane comprising a gantry type crane including a trolley, a girder support means for supporting said trolley and along at least a substantial length of which said trolley may move, grab means supported by said trolley for holding a container, and mounting means for mounting said girder support means above said storage yard; said mounting means comprising leg means for supporting said girder support means above said storage yard, at least one leg means having elongate foot means for distributing the weight supported by said at least one leg means, and container support means for supporting at least one container on said elongate foot means.

4,642,018

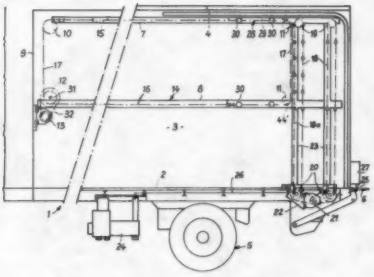
AUTOMATIC DEVICE FOR LOADING THE TOTAL VOLUME OF A TRANSPORT VEHICLE

Alain Leroux, Les Mureaux; Jean P. Fourtet, Sartrouville; Jean Hennard, Montlignon, and Andre Trouillet, Vanves, all of France, assignors to Compagnie des Transmissions Mecaniques Sedis; Generale de Transport et d'Industrie and Societe Auxiliaire de Manutention Acceleree de Denrees Alimentaires & Carrosserie Trouillet, all of, France

Continuation of Ser. No. 503,477, Jun. 13, 1983, abandoned. This application Jul. 30, 1985, Ser. No. 761,311
Claims priority, application France, Jun. 11, 1982, 82 10229; Jul. 13, 1982, 82 12267
Int. Cl.[4] B60P *1/36, 1/44*
U.S. Cl. 414—502 **19 Claims**

1. A device for automatically and fully loading a freight transporting vehicle which has a ceiling, a floor, opposed side walls (3), a front end and a rear loading opening end defining a useful volume, said device comprising: a plurality of movable floor elements (28) for forming at least one intermediate movable floor extending lengthwise of the vehicle, intermediate support means (8) adapted to support said at least one interme-

diate movable floor, said intermediate support means comprising at least one pair of horizontal opposed rails fixed to the opposed side walls of the vehicle in at least one intermediate position relative to the height of the walls, storing means (7) for storing said floor elements in a position where they do not support freight, said storing means comprising at least one pair



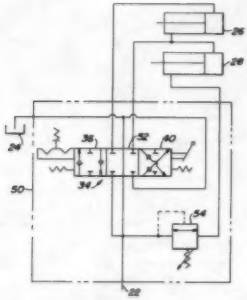
of horizontal opposed rails fixed to the opposed side walls of the vehicle above the intermediate support means (8) and in a position immediately adjacent the vehicle ceiling, lifting means (18) for lifting and lowering said intermediate floor elements, and means (14) for shifting and transferring said intermediate floor elements in either direction between said storing means, said intermediate support means and said lifting means.

4,642,019

HYDRAULIC CONTROL SYSTEM AND VALVE THEREFOR

Gary Sutton, Augusta, Ga., assignor to General Signal Corporation, Stamford, Conn. and Dempster Systems, Inc., Knoxville, Tenn.

Filed Dec. 19, 1984, Ser. No. 683,823
Int. Cl.⁴ B65F *3/00*
U.S. Cl. 414—525 R **13 Claims**



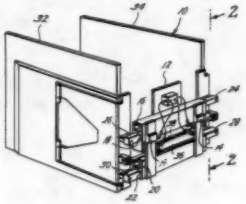
1. A hydraulic control system comprising:
a supply of high pressure hydraulic fluid;
a fluid reservoir for storing fluid at a pressure substantially below said supply fluid pressure;
first and second bi-directional fluid actuated motors adapted to travel a predetermined amount in each direction;
a directional control valve in fluid communication with said supply and said reservoir, having a first operating position for directing said supply of fluid to said motors in a first direction of flow and an opposite second operating position for directing said supply of fluid to said motors in a direction of flow opposite to said first direction of flow; and
a combination sequence and regeneration valve in continuous fluid communication with said supply and one side of said second motor and selectively placed into and out of fluid communication with said first motor and the other side of said second motor by said directional control valve for preventing the operation of said second motor until said first motor has reached its limit of travel and for regenerating fluid from said one side of said second motor to the other side when said first motor has reached its limit of travel and said control valve is in its second operating position.

4,642,020

TUBULAR SLIDE LIFT TRUCK ATTACHMENT

Stuart W. Sinclair, Lake Jackson, Tex., assignor to Long Reach Manufacturing Co., Houston, Tex.

Filed Jan. 31, 1985, Ser. No. 696,975
Int. Cl.⁴ B66F *9/18*
U.S. Cl. 414—621 **8 Claims**



1. In a load carrying clamp attachment for use on a lift truck having a body adapted to be mounted on a lift truck, said body have a plurality of elongate spaced parallel guides, each guide supporting a longitudinally movable slide, first and second load clamps connected to said slides for movement toward and away from each other for supporting and releasing a load, and piston and cylinder means connected to said load clamps for moving said clamps relative to each other, the improvement in the slides comprising,
said slides being metal tubular members,
a solid metal heel supporting member for distributing the forces from a heel plate to a tubular member coaxially positioned in one end of each of said tubular members, said heel supporting member generally filling the cross-sectional area of the tubular member, said supporting members having a length less than the length of the tubular members, and
a heel plate means connected to and supporting each load clamp, said heel plate means shaped to conform to the shape of the tubular member and bolted through a tubular member to the heel supporting member whereby the tubular members, heel supporting members and heel plate means are readily detachable from each other.

4,642,021

MANIPULATION ARM MECHANISM FOR AN INDUSTRIAL ROBOT

Makoto Kikuchi, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 5, 1984, Ser. No. 617,541
Claims priority, application Japan, Jun. 27, 1983, 58-115494; Jun. 27, 1983, 58-115495
Int. Cl.⁴ B25J *17/02*
U.S. Cl. 414—735 **16 Claims**

1. A manipulation arm mechanism for an industrial robot, said mechanism comprising:
(a) an arm (10) of said industrial robot;
(b) first to third drive means (50, 51, 52);
(c) a first shaft (11) rotatably carried within said arm (10) and

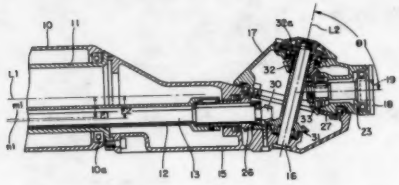
connected to said first drive means (50) to be driven thereby around an axis (L1);

(d) a rear casing (15) fixedly mounted on a front end of said first shaft (11);

(e) a front casing (17) carried on said rear casing (15) for rotation about an oblique axis (L2) slanted relative to the axis (L1) of said first shaft (11);

(f) a head mounting shaft (18) rotatably carried by said front casing (17) for rotation about an axis (L3), said head mounting shaft being capable of having a working head mounted thereon;

(g) a second shaft (12) rotatably carried within said rear casing (15), with a front end thereof being offset from the axis (L1) of said first shaft (11) on a first side of the axis (L1) of said first shaft (11), said second shaft being connected to said second drive means (51) to be rotated thereby around an axis (m1);



(h) a third shaft (13) rotatably carried within said rear casing (15), with a front end thereof being offset from the axis (L1) of said first shaft (11) on the first side by the axis (L1) of said first shaft (11), said third shaft being connected to said third drive means (52) to be rotated thereby around an axis (n1);

(i) first motion transmission means (26, 27) provided between the front end of said second shaft (12) and said front casing (17) for transmitting rotation from said second shaft (12) to said front casing (17); and

(j) second motion transmission means (30, 31, 16, 32, 33) provided between the front end of said third shaft (13) and said head mounting shaft (18) for transmitting rotation from said third shaft (13) to said head mounting shaft (18), whereby said front casing (17) can be provided back closer to said rear casing (15) on the side of the axis (L1) of said first shaft (11) opposite to said first side thereof than if the front ends of said second and third shafts (12, 13) were not offset from the axis (L1) of said first shaft (11).

4,642,022

CHAIN TURBINE SYSTEM

Leon Rydz, 115 Webster Ave., Yonkers, N.Y. 10701

Filed Aug. 28, 1985, Ser. No. 770,139
Int. Cl.[4] F03B *9/00*
U.S. Cl. 415—5 **5 Claims**

1. A chain turbine system of the type supported across a waterfall comprising:

A. a first frame mounted at one side of the waterfall and supporting a first shaft aligned with the waterfall, said first shaft supporting a chain sprocket at either end;

B. a second frame mounted at the other side of said waterfall and supporting a second shaft, said second shaft supporting a chain sprocket at either end;

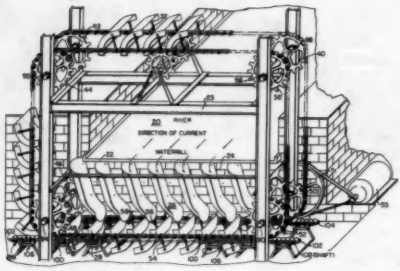
C. a pair of chains rotatably suspended in parallel and across said waterfall, each said chain engaging a pair of parallel chain sprockets, such that a driving portion of the chain travels through the waterfall, as a return portion of the chain is suspended apart from the waterfall;

D. a plurality of paddle-like deflection buckets pivoted at each side to each of said chains, each bucket further including a pair of pivoting struts interconnecting a free end side of the bucket with said chains;

E. individual roller wheels mounted at the free end of each bucket, so as to extend downwardly of the free end of the bucket during the driving portion and to extend above the bucket during the return portion;

F. a transverse track extending across the waterfall bed adjacent the driving portion of said chains, so as to be engaged by said roller wheels, and

G. a chain support assembly extending across said waterfall



and beneath each said chain during the driving portion and further including:

i. a roller frame supported upon brackets and positioned beneath each said chain;

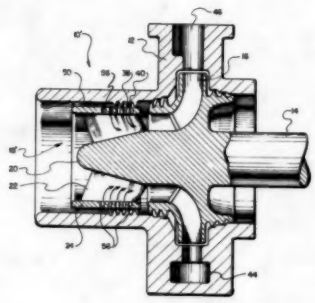
ii. a plurality of rollers mounted upon shafts extending through said roller frame and axially aligned with the waterfall, such that said roller engage each said chain during the lower driving portion.

4,642,023

VENTED SHROUDED INDUCER

Charlton Dunn, Calabasas, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 29, 1985, Ser. No. 759,983
Int. Cl.[4] F04D *29/66*
U.S. Cl. 415—53 R **5 Claims**



1. In a pump having a shrouded inducer rotatably mounted within a housing wherein an outer periphery of the shroud and an adjacent inner surface of the housing defines an annular space which conveys a recirculation flow of fluid during operation of the pump, an improvement for alleviating damage associated with said recirculation flow, the improvement comprising;

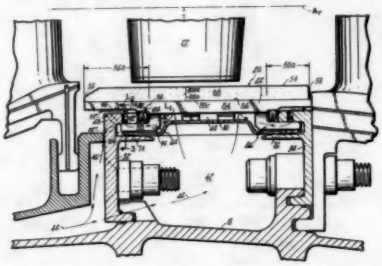
a plurality of vent holes located about the outer periphery of the inducer shroud and extending therethrough for conveying said recirculation flow from said annular space back into said shrouded inducer.

4,642,024

COOLABLE STATOR ASSEMBLY FOR A ROTARY MACHINE

Robert H. Weidner, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 5, 1984, Ser. No. 678,518
Int. Cl.⁴ F04D *25/28*
U.S. Cl. 415—116 **13 Claims**



1. In a gas turbine engine of the type having an annular flow path for working medium gases, an engine case extending circumferentially about the working medium flow path, a coolable stator assembly which includes an outer air seal spaced radially inwardly from the engine case leaving a cavity for cooling air therebetween and a means for supporting the outer air seal from the case about the working medium flow path, the improvement which comprises:

a coolable stator assembly which includes

an outer air seal formed of an array of arcuate segments, at least one of said segments having a passage for cooling air which extends through the segment and which is in flow communication with said cavity; and

a means for supporting the outer air seal which includes a support extending inwardly of the engine to engage the outer air seal, the support having at least one passage in flow communication with said passage in the outer air seal for metering the flow of cooling air which is radially oriented for directing cooling air radially inward through the support toward the arcuate seal segment to radially impinge the cooling air on the arcuate seal segment.

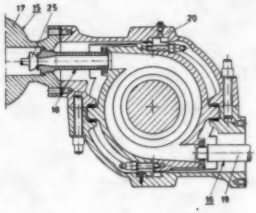
4,642,025

VALVE FOR STEAM SUPPLY ON DOUBLE CASING TURBINES

Peter Heiniger, Turgi; Jaroslav Masek, Wettingen, both of Switzerland, and Herbert Senn, Waldshut-Tiengen, Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed May 22, 1984, Ser. No. 613,036
Claims priority, application Switzerland, Jun. 9, 1983, 3164/83
Int. Cl.⁴ F01D *17/14*
U.S. Cl. 415—139 **5 Claims**

1. In a horizontal steam supply for double casing turbines, of the type having a valve housing communicating with exhaust steam pressure and an inner housing communicatable with fresh steam pressure, the valve housing accepting a diffusor, a valve seat, a cooperating valve closing body and a flange junction for direct fastening on an outer housing of a double casing turbine and also having an actuator motor and elements for transmitting the actuator motor movement to the valve closing body, the improvement comprising an outer casing of the double casing turbine and an inner casing of the double casing turbine; said inner casing enclosed by said outer casing; said diffusor positioned in the valve housing, the outer casing and the inner casing and concentric with at least a portion of the valve housing, the outer casing and the inner casing; a plain flange sealing surface provided on the valve housing for connection with the outer casing, the connection between the valve housing and the outer housing defining a junction arrangement; the position of the diffusor extending sufficiently beyond the flange sealing surface of the valve housing that a movable seal is provided between the inner casing and the diffusor at a position axially spaced from the plain flange sealing surface in a direction toward the turbine; a fastening device



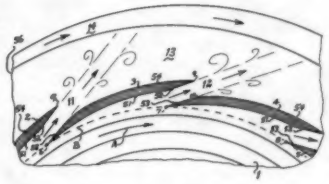
provided in the valve housing at a position axially spaced from the plain flange sealing surface in a direction away from the turbine, the fastening device being directly accessible and protruding through the valve housing to adjustably secure the diffusor and permit adjustment of the position of the diffusor so as to compensate for heat; said junction arrangement permitting the valve housing to be moved in a direction perpendicular with respect to the plain flange sealing surface of the outer casing.

4,642,026

CENTRIFUGAL COMPRESSOR WITH ADJUSTABLE DIFFUSER

John D. Ruff, 206 Birch St., Alexandria, Va. 22305

Continuation-in-part of Ser. No. 517,421, Jul. 26, 1983, abandoned. This application Mar. 20, 1984, Ser. No. 591,577
Int. Cl.⁴ F04D *29/46*
U.S. Cl. 415—150 **18 Claims**



1. A centrifugal gas compressor including impeller means rotatable in a predetermined direction about a first axis for receiving and centrifugally impelling a gaseous medium, and annular diffuser means for receiving and diffusing the centrifugally impelled gaseous medium, said diffuser means comprising:

front and back walls extending substantially radially outward from said first axis in mutually spaced relation to define a passage for said centrifugally impelled gaseous medium;

a plurality of control vanes bridging said passage and disposed at angularly sequential locations about said first axis in said passage, each control vane having a radially inward-facing surface, a radially outward-facing surface, a leading edge, and a trailing edge, and oriented such that said leading edge faces opposite said predetermined direction and into the flow of gaseous medium which is centrifugally impelled by said impeller means, wherein said

leading edge is a substantially linear intersection of said radially outward-facing surface and said radially inward-facing surface; and

control means for pivoting said plurality of control vanes about a respective plurality of control axes between open and fully closed positions, each control axis being coaxial with the leading edge of a respective control vane, said control means including means responsive to application of rotational forces thereto for transmitting the applied rotational forces to said control vanes to effect rotation of said control vanes about said control axes wherein in said fully closed position the radially inward-facing surface of each control vane overlies and contacts the radially, outward-facing surface of an adjacent control vane in flush abutting relation.

4,642,027

METHOD AND STRUCTURE FOR PREVENTING THE IGNITION OF TITANIUM FIRES

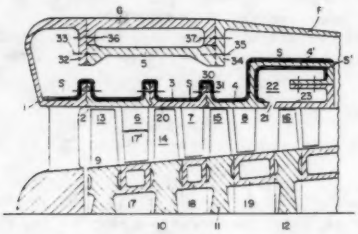
Joachim Popp, Dachau, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,524

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407945

Int. Cl.[4] F01D *5/08*

U.S. Cl. 415—177 **13 Claims**



1. A structure for preventing the ignition of a titanium fire in a machine assembly, such as a turbine engine, comprising a structural stationary component (**1, 2, 3, 4, 5**) made of titanium or titanium alloy, and a rotatable component (**9** to **19**) having a rotational axis and arranged for cooperation with said stationary component, said stationary component (**1, 2, 3, 4**) comprising radially inner first surfaces facing said rotatable component relative to said rotational axis and having second surfaces (S) located radially outwardly relative to said rotational axis, said second surfaces being accessible for treatment at least prior to assembling said components, said stationary component further comprising a protective coating layer (S) of a highly heat-conducting material intimately bonded directly to said second surfaces (S) for rapidly dissipating heat to prevent reaching temperatures that would otherwise cause said titanium fires.

4,642,028

CUFFED AIRCRAFT PROPELLER

William C. Buckman, Huber Heights, and Michael R. Tapp, Dayton, both of Ohio, assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Apr. 2, 1984, Ser. No. 595,753

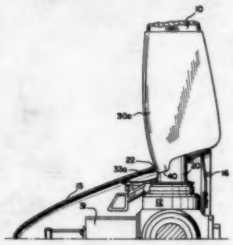
Int. Cl.[4] B64C *11/20;* **B64D** *15/00*

U.S. Cl. 416—95 **3 Claims**

1. In an aircraft blade and spinner combination in which a variable pitch blade, mounted on an aircraft hub, extends through a spinner opening, and in which the blade is provided with a generally cylindrical inner shank portion inwardly of the spinner, the improvement in blade cuff design comprising:

a blade cuff on said blade with the major portion of said cuff positioned at spanwise stations radially outwardly of said spinner for increasing the airflow efficiency of said blade at the cuffed region,

said cuff being flared radially inwardly through said spinner



opening and terminating at least in partially surrounding relation to said blade shank, forming a smooth rearwardly sloping nose portion at the interface between said cuff and said spinner opening, for minimum ice adhering tendencies.

4,642,029

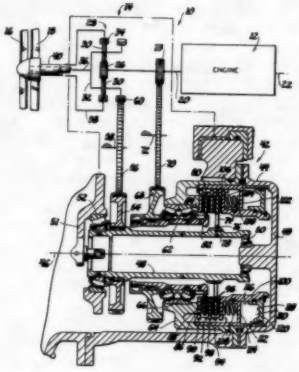
BRAKE FOR COUNTER ROTATING BLADED MEMBERS

Robert W. Cedoz, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1985, Ser. No. 745,439

Int. Cl.[4] B64C *11/48*

U.S. Cl. 416—129 **4 Claims**



1. In a propulsion system including a gas turbine engine having an output shaft and a gear drive having a planetary gear set with a first element connected to said engine output shaft and a second element connected to a first bladed member and a third element connected to a second bladed member whereby said first and second bladed members are rotated in opposite directions by said output shaft, a brake comprising, a first transfer shaft supported on a stationary housing for rotation about an axis of the latter, a second transfer shaft supported on said stationary housing for rotation about said axis, gear means between one of said counter rotating bladed members and said first transfer shaft, gear means between the other of said counter rotating bladed members and said second transfer shaft, a selectively operable brake actuator on said housing movable between an extended position and a retracted position, and friction means between said brake actuator and each of first and said second transfer shafts operative in said ex-

tended position of said brake actuator to simultaneously frictionally retard rotation of each of said first and said second transfer shafts whereby each of said counter rotating bladed members is simultaneously braked.

4,642,030

ARRANGEMENT FOR FEEDING FUEL FROM SUPPLY TANK

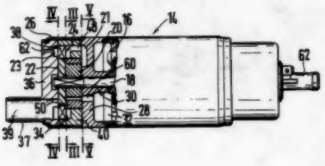
Karl-Heinz Friebe, Schwieberdingen; Karl-Otto Heinz, Walblingen, and Werner Scholten, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 25, 1985, Ser. No. 801,613

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1985, 3500139

Int. Cl.⁴ F04C *2/10*

U.S. Cl. 417—203 **12 Claims**



1. An arrangement for feeding a fuel from a supply tank to an internal combustion engine, the arrangement comprising a motor; a multistage feed pump unit driven by said motor and including a flow pump having a rotor and a gerotor pump having an inner runner arranged so that said rotor and said inner runner have aligning axes of rotation and said flow pump is arranged upstream of said gerotor pump as considered in the flow direction of a fuel, said rotor of said flow pump and said inner runner of said gerotor pump being located near one another as considered in an axial direction, said gerotor pump also having an outer runner which surrounds a feed chamber, and said rotor of said flow pump having a wall which axially limits said feed chamber surrounded by said outer runner of said gerotor pump.

4,642,031

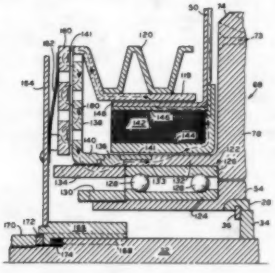
ALTERNATOR-COMPRESSOR CONSTRUCTION

James B. Farr, Ann Arbor, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed May 20, 1985, Ser. No. 736,389

Int. Cl.⁴ F04B *21/00;* **F16D** *27/10*

U.S. Cl. 417—223 **14 Claims**



1. An alternator-compressor assembly comprising:

a compressor including a crankshaft;

an alternator mounted on said compressor and including a stationary base and a rotor, said rotor including a hub member and an alternator member coaxially arranged therewith;

a bearing including inner and outer races, said inner race mounted on said base, said hub member being mounted directly on said outer race;

a drive pulley and clutch plate assembly concentrically arranged with said bearing;

stationary clutch coil means arranged between said drive pulley and said rotor for establishing a clutch magnetic flux field;

locking means connected with said clutch plate for locking said outer bearing race in position; and

drive pin means for drivingly securing said hub member to said drive pulley and clutch plate assembly, said drive pulley and clutch plate assembly and said hub member including aligned apertures for receiving said pin means, said locking means retaining said pin means in said apertures.

4,642,032

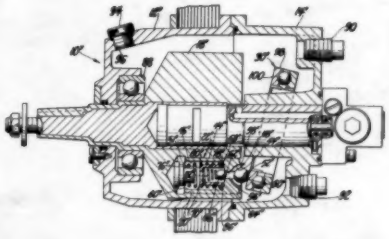
AXIAL PISTON PUMP INCLUDING BALL PISTON

James McBeth, North Vancouver, Canada, assignor to Teleflex Incorporated, Limerick, Pa.

Filed Aug. 7, 1985, Ser. No. 763,300

Int. Cl.⁴ F04B *1/12, 21/04*

U.S. Cl. 417—269 **7 Claims**



1. A piston pump assembly (10,10') comprising: housing means; a cylinder barrel (18,18') having an axis of rotation and being rotatably supported in said housing means about said axis of rotation, said cylinder barrel (18,18') including a plurality of piston cavities (20,20'); cam means (30,30'); and piston means (22,22') reciprocally supported in each of said piston cavities (20,20') for reciprocating movement and reacting with said cam means (30,30') and causing said reciprocating movement of said piston means (22,22'), said piston means (22,22') including a body portion (44,44') having a longitudinally extending central bore (46,46'), one end of said bore (46,46') defining a fluid inlet (48,48') into said bore (46,46') and the other end of said bore (46,46') defining a fluid outlet (51,51'), said assembly (10,10') characterized by said fluid inlet (48,48') including a ball seat (50,50') and a ball member (52,52') seated therein and substantially over said fluid inlet (48,48'), said ball member (52,52') engaging said cam means (30,30'), said seating surface (50,50') including at least one groove (54,54') extending from said fluid inlet (48,48') to the remainder of said bore (46,46') for facilitating fluid flow about said ball member (52,52'), said bore (46,46') including an enlarged main portion (60,60') extending along substantially the length of said piston means (22,22') and a secondary portion (62,62') in fluid communication between said main bore (60,60') and said fluid inlet (48,48') and having a smaller diameter than said main bore (60,60'), said main bore (60,60') including a terminal wall (64,64') having an opening (66,66') therethrough defining said secondary bore (62,62'), a check ball (74,74') disposed adjacent to said secondary bore (62,62') and biasing means for biasing said check ball (74,74') against said secondary bore (62,62') for allowing one way fluid flow through said secondary bore (62,62') to said main bore (60,60'), said biasing means including a support member

(70,70') having a hub portion (76,76') and a rim portion (78,78'), an external spring member (80,80') disposed within said main bore (60,60') and engaging said rim portion (78,78') for biasing said support member (70,70') against said terminal wall (64,64') and an internal spring (82,82') disposed between said hub portion (76,76') and said check ball (74,74') for urging said check ball (74,74') into sealing engagement with said secondary bore (62,62').

4,642,033

POSITIVE DISPLACEMENT AIR COMPRESSORS

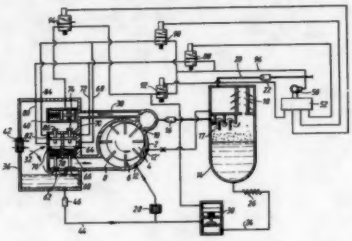
Edward Boller, West Midlands, England, assignor to The Hydrovane Compress or Company Limited, Redditch, England

Filed Nov. 18, 1985, Ser. No. 798,917

Claims priority, application United Kingdom, Nov. 19, 1984, 8429144

Int. Cl.[4] F04B *49/02, 49/08, 49/10*

U.S. Cl. 417—295 **4 Claims**



1. A rotary positive displacement air compressor including:

a stator;

said stator containing a rotor and having an inlet and an outlet,

said inlet including at least two independently actuable inlet valves in parallel each operated by a fluid pressurized by said compressor;

detecting means for detecting, in use, the pressure of the compressed air and arranged to produce a signal when said pressure exceeds or is less than predetermined values thereby indicating whether the rate at which air is being compressed exceeds or is less than the compressed air demand to which the compressor is subjected;

actuating means controlled by said detecting means and arranged to open and close each said inlet valve independently to vary the rate of air flow through said inlet;

control means connected to said detecting means;

a respective control valve connected to each said inlet valve and to said control means, said control means being arranged to increase or decrease the open area of said inlet by one step when said pressure exceeds or is less than said predetermined values, respectively,

each said inlet valve including a main piston whose movement is controlled by the associated said control valve and an auxiliary piston which is movable under the control of said control means into a position in which it limits the movement of the associated said main piston,

said control means being so arranged that when one said inlet valve is closed and at least one other inlet valve is opened the said auxiliary piston of the at least one other inlet valve is positioned to limit the movement of the associated said main piston but when all said inlet valves are open said auxiliary pistons are positioned not to limit the movement of said main pistons.

4,642,034

SCROLL TYPE COMPRESSOR WITH DISPLACEMENT ADJUSTING MECHANISM

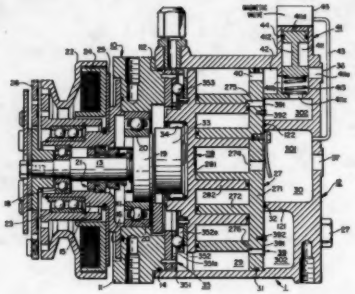
Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Isesaki, Japan

Filed Nov. 8, 1984, Ser. No. 669,389

Claims priority, application Japan, Nov. 8, 1983, 58-208356[U]

Int. Cl.[4] F04B *49/02;* **F04C** *18/02, 29/10*

U.S. Cl. 417—295 **5 Claims**



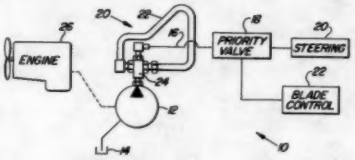
1. In a scroll type fluid compressor including a housing having a fluid inlet port and a fluid outlet port, a fixed scroll fixedly disposed within said housing and having a circular end plate from which a first end wrap extends into the interior of said housing, an orbiting scroll having a circular end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to form a plurality of line contacts which define at least one pair of sealed off fluid pockets, a driving mechanism operatively connected to said orbiting scroll to effect the orbital motion of said orbiting scroll, rotation preventing means for preventing the rotation of said orbiting scroll during orbital motion to thereby change the volume of the fluid pockets and a discharge chamber associated with said fluid outlet port and located adjacent one of said circular end plates on a side opposite its respective wrap to receive compressed fluid from a central fluid pocket formed by said scrolls during orbital motion, the improvement comprising:

at least one pair of holes formed through said circular end plate of one of said scrolls to form a fluid channel between the pair of sealed off fluid pockets and an intermediate pressure chamber located on the opposite side of said circular end plate of said one scroll from its respective wrap and separated from said discharge chamber, said pair of holes being located at symmetrical locations along said respective wrap so the wrap of the other of said scrolls simultaneously crosses over both of said pair of holes during orbital motion of said orbiting scroll, a communication channel formed through said circular end plate of said one scroll and opening onto a suction passageway which forms a fluid channel between said intermediate pressure chamber and a suction chamber located on the same side of said circular end plate of said one scroll as its respective wrap, said suction passageway also formed between said inlet port and said suction chamber, first control means for selectively controlling the opening and closing of said communication channel between said intermediate pressure chamber and said suction chamber, and second control means operating in conjunction with the operation of said first control means for increasing the resistance of said scroll type fluid compressor to suction during the initial opening of said communication channel by said first control means to thereby adjust the compression ratio of said scroll type fluid compressor.

4,642,035
CROSS LOOP ATTENUATOR FOR HYDRAULIC SYSTEMS

Gary A. Nyquist, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 23, 1984, Ser. No. 572,793
Int. Cl.[4] F04B *11/00*
U.S. Cl. 417—312 5 Claims

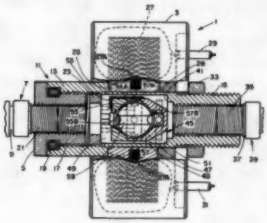


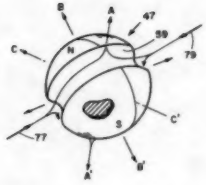
1. In combination with a vehicle hydraulic system including an engine driven pump having a plurality of individual expansible and contractable pumping chambers coupled for delivering fluid to a system pressure conveying line, a reactive attenuator, comprising: a conduit formed into a loop and having its opposite ends coupled directly to opposite sides of said line and being in free fluid communication with the line and each other.

4,642,036
MAGNET BALL PUMP

Niels O. Young, 339 Magnolia, Piedmont, Calif. 94610

Filed Sep. 17, 1984, Ser. No. 651,492
Int. Cl.[4] F04D *5/00, 29/22*
U.S. Cl. 417—353 15 Claims



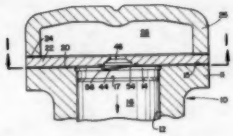


1. A centrifugal flow fluid pump comprising:
(a) a housing section comprising a fluid inlet and a fluid outlet;
(b) an inlet socket disposed within the housing section and provided with a first recess therein;
(c) an outlet socket provided with a second recess therein, the inlet and outlet sockets being disposed to form a socket assembly and configured to provide for fluid communication between the fluid inlet and fluid outlet and wherein the first and second recesses collectively define a chamber, the chamber having a substantially spherical interrupted wall;
(d) a generally spherical impeller comprised of magnetic material having a magnetic polarization axis and disposed within the chamber and sized to be freely disposed within the chamber for rotation on any axis therein whereby the rotation of the impeller creates a radial outflow of a fluid between the fluid inlet and the fluid outlet and the impeller rotates substantially with no contact between the impeller surface and the chamber wall; and
(e) an electromagnetic means for rotating the impeller.

4,642,037
REED VALVE FOR REFRIGERATION COMPRESSOR

Jack F. Fritchman, Cullman, Ala., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 587,380, Mar. 8, 1984, abandoned. This application Feb. 11, 1985, Ser. No. 698,762
Int. Cl.[4] F04B *39/10;* F16K *15/16*
U.S. Cl. 417—571 19 Claims



1. A reed valve for a refrigeration compressor having a cylinder having an open end, a valve plate extending over said open end, a piston reciprocable in said cylinder, a valve port opening in said valve plate, said valve plate having a valve seat around said valve port, a valve reed having a base fixedly secured with respect to said valve plate and having a head portion spaced from said base, an axis extending from said base to said head portion, said head portion including a sealing portion operable to make sealing engagement with said valve seat when biased by fluid pressure, said sealing portion when said valve reed is unstressed being resiliently biased out of sealing engagement with said valve seat, with said sealing portion lying in a plane inclined to the plane of said valve seat and in contact with the valve seat at a point thereon on one side of said axis.

4,642,038
CONTINUOUS IN SITU FIBERIZATION SUBSTRATE MATERIAL MECHANISM

Nathan R. Kramer, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 25, 1985, Ser. No. 801,438
Int. Cl.[4] B29C *63/22*
U.S. Cl. 425—93 17 Claims

1. An apparatus for fiberizing a belt shaped substrate with fibrous material from a fiber forming polymer solution comprising:
(a) a container having a bottom, sides and a top which define a fiber forming zone for holding fiber forming polymer solution wherein the container top includes a surface defining an access opening to provide access to the fiber forming zone;
(b) a belt having a top, a bottom and two sides;
(c) first pulley means for directing the belt vertically down into the fiber forming zone through the access opening;
(d) second pulley means located within the fiber forming

zone for receiving the belt from the first pulley means and directing the belt vertically upward and out of the fiber forming zone through the access opening;

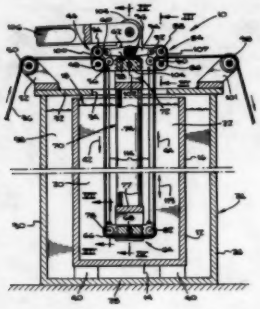
(e) means for mounting the second pulley means within the fiber forming zone;

(f) third pulley means for receiving the belt from the second pulley means;

(g) a horizontal pivot bar located above the second pulley means, the pivot bar having a first end, a second end and a middle pivot point;

(h) means for mounting the first pulley means to the first end of the pivot bar;

(i) means for mounting the third pulley means to the second end of the pivot bar;



(j) means for introducing the belt into the fiber forming zone at a constant rate and for removing the belt from the fiber forming zone at the same constant rate; and

(k) pivot means for pivoting the pivot bar about the middle pivot point to vertically move the first and third pulley means in a pivoting movement in opposite directions over a pivot distance and at a pivot frequency to provide oscillation of the belt as the belt passes through the polymer solution, the pivot distance and pivot frequency being sufficient to produce a sufficient oscillation of the belt within the polymer solution to provide fiberization of said belt with the fibrous material as the belt passes through the fiber forming zone.

4,642,039

APPARATUS FOR PRODUCING PROFILES OR WEBS SUCH AS TREAD STRIPS FOR VEHICLE TIRES

Dietmar Anders, Sandton, South Africa, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 12, 1985, Ser. No. 743,906

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1984, 3424257

Int. Cl.[4] B29C *47/92*

U.S. Cl. 425—140 **3 Claims**

1. Apparatus for producing profiles or webs such as tread strips for vehicle tires, comprising:

(a) an extruder including a barrel having an internal surface defining a chamber having a longitudinal horizontally extending axis, screw means rotatable in said chamber and drive means for said screw means, and drive means operatively connected to said roller, said barrel defining a discharge end for discharging extruded material from said chamber;

(b) extruder head means communicating with the discharge end of said chamber for receiving extruded material, said extruder head means comprising:

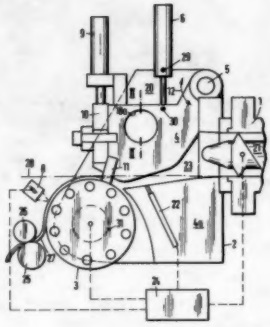
(1) first and second opposed lateral side walls, said side walls being formed with wedge-shaped openings;

(2) a first head portion, and means for pivotally mounting the same on said opposed side walls for movement between a first, closed position and a second open and elevated position;

(3) means for locking said first head portion in a closed position comprising fluidically actuated wedge-shaped locking members engageable in said openings in said opposed side walls, and piston-cylinder means mounted on said opposed side walls and operatively connected to said locking members for actuating the same;

(4) a second head portion located below said first head portion and defining therewith a channel for the passage of extruded material therethrough; and

(5) profiled bar means mounted on said first head portion and projecting into said channel for shaping the extruded material; and



(c) roller means mounted between said opposed side walls, and means for mounting and rotating said roller means on a horizontal axis of rotation, said roller means including an external surface over which the extruded material passes, said external surface being disposed totally below, and downstream and spaced from the internal surface of said barrel, and drive means operatively connected to said roller, said external surface of said roller also being spaced from said first and second head portions;

whereby said first head portion can be rotated upwardly upon release of said locking member so as to expose said barrel and screw means for cleaning, or replacement.

4,642,040

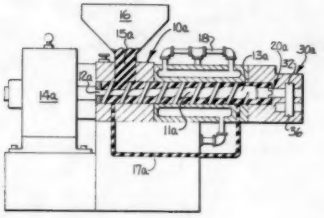
EXTRUDER DRIVINGLY CONNECTED TO GEAR PUMP

Steve A. Fox, Hickory, N.C., assignor to Normag Corporation, Hickory, N.C.

Filed Aug. 23, 1985, Ser. No. 768,574

Int. Cl.[4] B29B *47/00*

U.S. Cl. 425—204 **16 Claims**



1. An apparatus for accurately metering a viscous material, comprising an extruder with a positive displacement pump in tandem relation thereto for receiving extrudant from the extruder, said pump comprising two cooperatively counterrotating rotors, drive means for said extruder, and means drivingly

connecting said extruder to said positive displacement pump for driving the positive displacement pump.

4,642,041

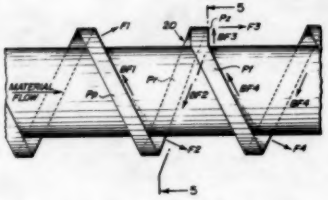
EXTRUDER SCREW FOR MINIMIZING THE OPPOSING PRESSURE FLOW

Richard W. Murphy, 330 Tamarack Dr., Allentown, Pa. 18104

Filed Jan. 31, 1986, Ser. No. 824,678

Int. Cl.⁴ B29B 7/14

U.S. Cl. 425—208 **7 Claims**



1. In extrusion apparatus, where the apparatus is subject to the opposing forces of drag flow and pressure flow, comprising a housing and an extruder screw extending substantially the length of said housing, where said extruder screw in sequence from one end thereof contains a feed section, a transition section, and a metering section, the improvement comprising in combination therewith the provision on said screw of a first back flow seal prior to said transition section, and a second back flow seal near the end of said extruder screw to minimize said pressure flow, wherein each said back flow seal comprises a first length of flighting having a reduced slope over that preceding said first length of flighting, and a second length of flighting having zero slope measure from a line perpendicular to a rotation axis of the screw.

4,642,042

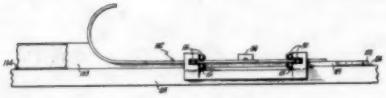
APPARATUS FOR MAKING COMPOSITE SHEETS

J. Harold Smith, Amherst, Mass., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Jul. 5, 1985, Ser. No. 752,691

Int. Cl.⁴ B28B 5/00

U.S. Cl. 425—364 R **10 Claims**



1. A fuel cell manufacturing apparatus for making composite sheets comprising a movable belt means and a metering member that is separated from the belt means by a distance at least equal to a predetermined final thickness of the composite sheet, said metering member particularly adapted to vibration in a direction transverse to the belt means, the metering member comprising:

(a) a curved plate section that is at its closest point to the belt less than 120% of the thickness of the predetermined final thickness;

(b) an inclined plate section, contiguous to said curved plate section at said closest point, wherein the inclined plate section slopes towards the belt from the curved plate section to a second point which is separated from the belt means by a distance substantially equal to the predetermined final thickness of the composite sheet;

(c) a flat plate section contiguous to said inclined plate section at said second point, wherein said flat plate section is both parallel to the belt means and separated from the belt means by a distance substantially equal to the predetermined final thickness of the composite sheet;

(d) said metering member sections capable of oscillating in opposite directions transverse to the belt means; and

(e) means for oscillating said metering member sections.

4,642,043

DEVICE FOR THE ELECTRIC HEATING AND FLUID COOLING OF AN INJECTION-MOLDING MACHINE NOZZLE

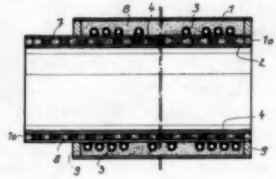
Eugen Schwarzkopf, Lüdenscheid, Fed. Rep. of Germany, assignor to Hotset Heizpatronen und Zubehör GmbH, Lüdenscheid, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 627,802

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324901

Int. Cl.⁴ B29C 45/78

U.S. Cl. 425—547 **9 Claims**



1. A heating and cooling jacket for synthetic resin distributor for an injection molding machine, comprising:

a cylindrical circumferentially closed one-piece prefabricated outer metal sleeve;

a cylindrical, circumferentially closed prefabricated intermediate metal sleeve coaxial with and disposed within said outer metal sleeve and radially spaced therefrom to define an outer annular compartment between said inner and outer metal sleeves;

a cylindrical, circumferentially closed prefabricated inner metal sleeve coaxial with and disposed within said intermediate metal sleeve and radially spaced therefrom to define an inner annular compartment between said inner metal sleeve and said intermediate metal sleeve;

means for closing said inner and outer annular compartments at opposite axial ends thereof;

a cooling coil having a multiplicity of cooling-tube turns of flattened cross-section lying against said intermediate metal sleeve and against said inner metal sleeve within said inner annular compartment, at least some of said inner turns being separate from one another by interturn spaces;

an electric heater having a plurality of helical turns in spaced apart relationship in said outer annular compartment and in contact with said intermediate metal sleeve;

a first means of densely packed heat-conductive metal particles filling said outer annular compartment and spaces between the turns of said heater between said outer metal sleeve and a second mass of high conductivity densely-packed metal particles filling said inner annular compartment between said inner metal sleeve and said intermediate metal sleeve and the spaces between the cooling-tube turns of said cooling coil.

4,642,044

LOCK

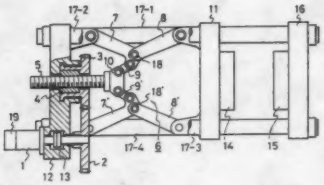
Yasushi Ishikawa, and Takeshi Fukuroi, both of Yamanashi, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP84/00555, § 371 Date Jul. 23, 1985, § 102(e) Date Jul. 23, 1985, PCT Pub. No. WO85/02363, PCT Pub. Date Jun. 6, 1985

PCT Filed Nov. 20, 1984, Ser. No. 761,560

Int. Cl.[4] B29C *45/66*

U.S. Cl. 425—593 **3 Claims**



1. A lock in an injection molding apparatus, having a fixed back pressure plate connected to one end of a plurality of tie bars extending in parallel with each other, a movable base slidably supported by said tie bars and adapted to receive a first mold, and a double toggle type toggle mechanism having at least one pair of link means each of which is pivotally connected between said fixed back pressure plate and said movable base for moving between extended and retracted positions, said lock being arranged to move said movable base with respect to a fixed base to which a second mold is fixed, until said link means becomes straight, so that the first and second molds are clamped by an elastic restoration force generated by extension of said tie bars, the improvement comprising:

(a) a servo motor; and

(b) a transmission mechanism having a nut mechanism rotatably supported by said fixed back pressure plate and a screw threadedly engaged with said nut mechanism and extending substantially in parallel with said tie bars,

wherein said nut mechanism is adapted to be rotatively driven by said servo motor for rotatively driving said screw, said screw is adapted to be rotatively driven for reciprocal movement substantially in parallel with said tie bars to extend and retract said link means, and said servo motor operates to hold said link means straight when said link means is straightened.

4,642,045

POST-COMBUSTION GAS-BURNER OF A HYDROGEN PEROXIDE EMULSION

Charles Provost, 3 Place de la Monnaie, 44000 Nantes, France

PCT No. PCT/FR83/00189, § 371 Date Apr. 22, 1985, § 102(e) Date Apr. 22, 1985, PCT Pub. No. WO85/01568, PCT Pub. Date Apr. 11, 1985

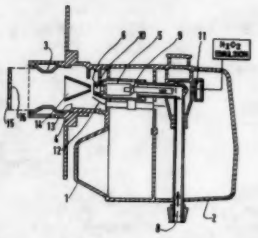
PCT Filed Sep. 26, 1983, Ser. No. 726,003

Claims priority, application France, Apr. 14, 1982, 82 06627

Int. Cl.[4] F23J *7/00*

U.S. Cl. 431—4 **7 Claims**

1. A method for increasing the flame temperature of combustion gases, comprising the steps of combusting said combustion gases while injecting an atomized emulsion of hydrogen



peroxide, water and soluble oil into said combustion gases, whereby heat power of said combustion gases is increased.

4,642,046

PULSE COMBUSTOR

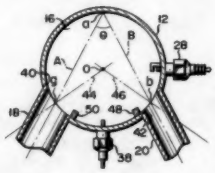
Kazuo Saito, Fujinomiya; Takashi Matsuzaka, Fuji; Mitsuyoshi Chiba, Fuji; Shigeto Sumitani, Fuji; Masami Yodo, Fuji, and Hiroyuki Araya, Fujinomiya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 23, 1984, Ser. No. 643,384

Claims priority, application Japan, Oct. 28, 1983, 58-202325

Int. Cl.[4] F23D *14/62*; F23C *11/04*

U.S. Cl. 431—354 **20 Claims**



1. A pulse combustor comprising:

a main body including;

an interior cylindrical mixing chamber having a first closed end and a second open end,

and a combustion chamber communicating with said second end of said mixing chamber, said mixing chamber having an inner peripheral surface, an air inlet port and a fuel inlet port, both said air inlet and fuel inlet ports being provided on the same circumference of said inner peripheral surface of said mixing chamber, and located at a predetermined distance from one-another;

an air supply pipe connected to said air inlet port in such a position as to introduce air into said mixing chamber to cause the air to flow within said mixing chamber in a rotational direction along said inner peripheral surface of said mixing chamber;

a fuel supply pipe connected to said fuel inlet port in such a position as to introduce fuel into said mixing chamber in a direction opposite the direction in which said air rotates; and

an igniting member mounted on said main body to extend into the interior of said mixing chamber and intended to ignite a mixture of said air and fuel introduced into said mixing chamber.

4,642,047

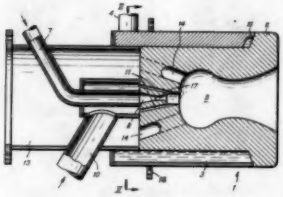
METHOD AND APPARATUS FOR FLAME GENERATION AND UTILIZATION OF THE COMBUSTION PRODUCTS FOR HEATING, MELTING AND REFINING

Grigory M. Gitman, Duluth, Ga., assignor to American Combustion, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 642,141, Aug. 17, 1984. This application Jul. 15, 1985, Ser. No. 755,831

Int. Cl.[4] F27B *14/00, 9/40;* B05B *7/06;* F23D *11/44*

U.S. Cl. 432—13 49 Claims



1. An economizing method of hydrocarbon fluid fuel combustion in an ongoing hydrocarbon flame formed in a combustion chamber within liquid cooled combustion block having an outlet nozzle directed into a hot furnace interior, to reduce the consumption of fuel and pure oxygen in heating processes, comprising the steps of:

separately supplying hydrocarbon fluid fuel and two different oxygen based oxidizing gases to the combustion chamber;

directing said first oxidizing gas having a given oxygen concentration through at least one opening in the combustion chamber wall toward said combustion chamber outlet nozzle;

directing said hydrocarbon fuel into said combustion chamber in a stream directed through at least one opening in the combustion chamber wall above and toward said first oxidizing gas so that said hydrocarbon fuel is caused to be mixed with said first oxidizing gas to stabilize combustion within the combustion chamber thereby creating a highly luminous hot flame core extending throughout said combustion chamber;

directing said second oxidizing gas having different oxygen concentrations from said first oxidizing gas through at least one opening in the combustion chamber wall into said combustion chamber is a stream directed about and toward said hydrocarbon fuel in the flame core so that said second oxidizing gas initially insulates said core from cooling by contact with the liquid cooled block prior to being mixed with said hydrocarbon fuel for final combustion;

discharging the products of combustion from the combustion chamber through a liquid cooled nozzle opening toward the furnace interior; and

controlling the flow of said hydrocarbon fuel, said two oxidizing gases and cooling liquid.

4,642,048

APPARATUS FOR CONTINUOUSLY PREHEATING AND CHARGING RAW MATERIALS FOR ELECTRIC FURNACE

Youn S. Kim, 6-506 Jugong Apartment Gaza-Dong, Buk-Ku, Inchon, Rep. of Korea (160)

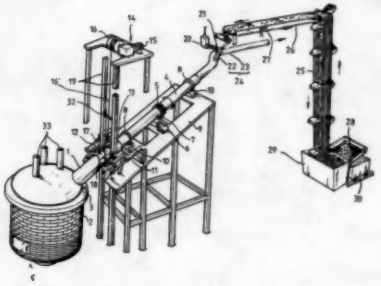
PCT No. PCT/KR85/00014, § 371 Date Feb. 27, 1986, § 102(e) Date Feb. 27, 1986, PCT Pub. No. WO86/00394, PCT Pub. Date Jan. 16, 1986

PCT Filed Jun. 24, 1985, Ser. No. 841,519

Claims priority, application Rep. of Korea, Jun. 30, 1984, 84-3820

Int. Cl.[4] F27B *7/00;* F23K *3/00*

U.S. Cl. 432—103 1 Claim



1. Apparatus for preheating and charging raw materials for an electric furnace, comprising: a waste gas guiding duct disposed on one side of a roof of an electric furnace;

a rotating duct spaced apart from said guiding duct, and inserting duct insertable into said guiding duct;

a guide rail;

a storage means;

a connecting duct arranged to be lifted to an upper limit position and guided by said guide rail;

a stationary duct fixed at a lower end portion of said rotating duct;

a branch tube arranged at an upper end portion of said rotating duct, said branch tube being bifurcated as a waste gas exhaust duct and a feed chute provided with a control damper and a hopper;

a belt conveyor provided with a weighing means and a bucket conveyor merged into said storage means having a screen at a lower end portion thereof.

4,642,049

PROCESS FOR PREHEATING A COMBUSTIVE GAS BY MEANS OF COMBUSTION GASES AND PREHEATING DEVICE ASSOCIATED WITH A BURNER FOR CARRYING OUT THE SAID PROCESS

Raymond Louis, Montmagny, France, assignor to Gaz de France, France

Filed Jan. 16, 1986, Ser. No. 819,277

Claims priority, application France, Jan. 22, 1985, 85 00861

Int. Cl.[4] F28F *1/10*

U.S. Cl. 432—223 3 Claims

1. A device for preheating a combustive gas by combustion gases escaping from a thermal space, said device comprising in combination:

a box member (1) comprising an inlet (15) for the combustion gases and an inlet (10) for the combustive gas;

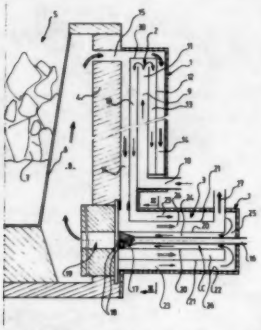
a first exchanger (2) contained in said box member and comprising: duct means (19) connected to the inlet (10) for the combustive gas; a first jacket (12) surrounding said duct means and defining therewith a first space (13) for the circulation of the combustive gas; and a second jacket surrounding said first jacket to define therewith a second

space (14) connected to said inlet (15) for the combustion gases;

a burner (C) comprising a combustible gas supply duct (16) and above which said first exchanger (2) is substantially vertically arranged;

a second exchanger (3) incorporated in said burner and comprising three pipes: inner, intermediate and outer substantially concentric pipes (20, 21, 22) surrounding said supply duct and defining, an outer space (23) and an inner space (24) which contains said supply duct, said outer and inner spaces communicating with one another and with said first space (13) of said first exchanger, an intermediate space (26) communicating with said second space (14) of said first exchanger;

means (28, 29) for providing rotation of the combustive



gases and the combustion gas when they respectively pass from said first space (13) to said outer and inner spaces (23, 24) and from said second space (14) to said intermediate space (26) said means for providing rotation of the gases comprising a first duct (28) for providing communication between said first space (13) and said outer and inner spaces (23, 24), said first duct being tangentially connected to said outer concentric pipe (22), and a second duct (29) for providing communication between said second space (14) and said intermediate space (26), said second duct being tangentially connected to said intermediate concentric pipe (21) and wherein

said combustible gas supply dict (16) has a substantially conical end (17) with orifices (18) communicating with said inner space (24) of said second exchanger (3), defined by said inner concentric pipe (20) and said supply duct.

4,642,050

ALIGNMENT CAP FOR MOUNTING ARTIFICIAL TEETH ON WORKING MODELS

Lucien J. Heinix, Antwerp, Belgium, assignor to Alphadent, Belgium

Filed Apr. 5, 1985, Ser. No. 720,178

Claims priority, application Belgium, Apr. 20, 1984, 2/60396

Int. Cl.[4] A61C *11/00*

U.S. Cl. 433—56 **5 Claims**

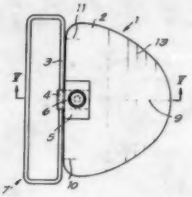
1. An alignment cap for mounting artificial teeth on a submaxillary working model comprising:

(a) a cap body in the configuration of the retromandibular triangle of the working model and having a proper arch and including a backside;

(b) the cap body being formed of transparent material for permitting viewing therethrough of teeth mounted on the working model;

(c) anchoring means directly attachable to the lateral and back sides of the working model for defining an axis of rotation lying against the retromandibular triangle of the working model; and

(d) means for connecting the backside of the cap body to the anchoring means for permitting the cap body to pivot



about the axis of rotation, but not be displaceable in its axial direction, with respect to the working model.

4,642,051

DENTAL HANDPIECE

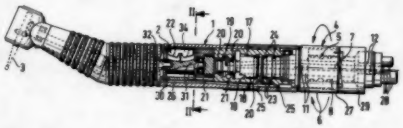
Gerd Löhn, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Jul. 22, 1985, Ser. No. 757,609

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433876

Int. Cl.[4] A61C *1/02*

U.S. Cl. 433—100 **4 Claims**



1. A dental handpiece, a gripping sleeve part having a built-in air motor for the drive of a treating implement which is supported in the gripping sleeve part; a detachable connecting member being associated with the gripping sleeve part; a control device possessing a handgrip for changing the direction of rotation of the air motor being associated with said air motor; said control device including a rotary slide valve and said handgrip being an external turn ring including a follower projecting through a radial guide slot in said connecting member for connection with the rotary slide valve; said connecting member including two passageways connectable with the air motor through outlet orifices for, respectively, the infeed of driving air and for the discharge of exhaust air; said radial guide slot including stops at the ends thereof wherein the positions of said stops corresponds to the two rotational end positions of the rotary slide valve, the passageways towards the gripping sleeve part being arranged in a trunnion-shaped extension of the connecting member which is detachably insertable into the axial receiving opening of the gripping sleeve part, the extension including annular channels; sealing rings for saling said channels through contacting the inner wall of the receiving opening of the gripping sleeve part, the outlet orifices of the partial passageways towards the gripping sleeve part communicating with said channels whereby said annular channels connect through connecting passageways in the gripping sleeve part with the work chamber of said air motor; said control device being arranged centrally and coaxially in the core of the connecting member, said passageways being interrupted over the axial length of the rotary slide valve, with the formation of partial passageways remote from the gripping sleeve, and partial passageways towards the gripping sleeve part which possess the outlet orifices; the rotary slide valve including two paired connecting passageways of which, in the one rotational end position of the rotary slide valve, the one pair of the partial passageway remote from the gripping sleeve part driving air connecting with the one partial passageway

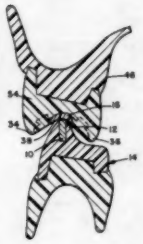
towards the gripping sleeve part, as well as connecting the partial passageway remote from the gripping sleeve part which conducts the exhaust air with the other partial passageway towards the gripping sleeve part; and for reversing the direction of rotation of the air motor in the other rotational end position of the rotary slide valve, the other pair of the partial passageway remote from the gripping sleeve part connecting with the other partial passageway towards the gripping sleeve part, as well as connecting the partial passageway remote from the gripping sleeve part with the partial passageway towards the gripping sleeve part.

4,642,052

DENTURE WITH CHEWING INSERTS

Robert D. Carlson, 306 Walnut Ave., #39, San Diego, Calif. 92103

Filed Oct. 2, 1985, Ser. No. 782,876
Int. Cl.[4] A61C *13/00*
U.S. Cl. 433—189 **15 Claims**



1. A denture comprising:

an upper and a lower row of artificial teeth having opposed occlusal faces, the opposed occlusal faces of at least a portion of the teeth being shaped to have buccal cusps in the lower row and cooperating indented surfaces in the upper row for cooperation with said buccal cusps on articulation of the denture;

a continuous insert bar of material harder than that of the artificial teeth embedded in the buccal cusps along at least part of the lower row of teeth so as to form the apex of each buccal cusp through which it extends; and

a plurality of insert members of material harder than that of the artificial teeth embedded in the occlusal faces of the upper teeth in the row opposing the insert bar, each insert member forming at least part of the indented surface of the tooth in which it is embedded so as to interact with the insert bar on articulation of the denture;

the insert members comprising curved members arranged in opposed pairs, at least one pair of insert members being embedded in each tooth opposing the insert bar so that they form an arch following the indented surface on the occlusal face of that tooth, the limbs of each insert member being inclined inwardly towards the opposed member of that pair and downwardly relative to the horizontal plane of occlusion.

4,642,053

PILLAR CUSP

Robert D. Westerman, 7 Oak Alley, Baton Rouge, La. 70806

Continuation of Ser. No. 524,578, Aug. 19, 1983, abandoned. This application Apr. 16, 1985, Ser. No. 723,737
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—225 **10 Claims**

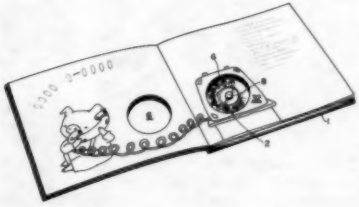
1. An apparatus for use in connection with tooth restoration, specifically the restoration of one or more cusps of a tooth, comprising a frustum with a bore through its base, said bore being at least partially threaded, the threaded portion thereof beginning at said base of said frustrum, and a dental anchoring pin, one end of which is for inserting in a channel drilled into the dentin portion of said tooth being restored, the other end of said pin threadedly engaging the threaded portion of said bore, wherein the diameter of said base of said frustum ranges between approximately 1.9 mm and 2.5 mm, the height of said frustum ranges between approximately 2.5 mm and 5.0 mm, and the angle of the side taper of said frustum ranges between approximately 3° and 4°.

4,642,054

PICTURE BOOK HAVING A TELEPHONE DIAL THEREIN

Yoshiomi Wada, 3-53-10, Higoshi Oizumi-machi Nerima-ku, Tokyo, Japan

Filed Mar. 18, 1985, Ser. No. 713,251
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—178 **7 Claims**



1. A picture book comprising front and back covers, and further a plurality of printed paper sheets therebetween, characterized in that a telephone dial structure is attached on the inside surface of said back cover, and that said dial structure comprises a dial plate attached on said back cover, said dial plate bearing numerical symbols and provided with a hole, said dial plate including an abutment surface, a finger plate formed of a plurality of holes in spaced circumferential positions each aligned to said numerical symbol, a shaft received within holes of said dial and finger plates to permit rotation of said finger plate, a stopper rigidly connected to said finger plate and engageable with said abutment surface formed in said dial plate, and a spring arranged between said finger plate and dial plate for urging said stopper toward said abutment surface.

4,642,055

HEMODYNAMIC MONITORING TRAINER

Steven S. Saliterman, 1920 S. First, #1008, Minneapolis, Minn. 55454

Filed Jun. 24, 1985, Ser. No. 747,767
Int. Cl.[4] G09B *23/32*
U.S. Cl. 434—268 **33 Claims**

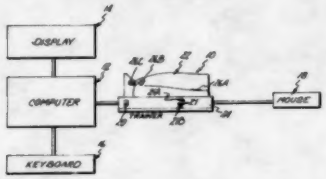
1. A training system comprising:

a manikin having an insertion site at which a catheter may be inserted into the manikin;

means positioned at the insertion site for receiving a catheter as it is inserted into the manikin at the insertion site;

means for guiding the catheter along a path from the insertion site;

position sensing means for providing signals from which a location of a tip of the catheter can be determined; and



means for providing an output as a function of the signals from the position sensing means.

4,642,056

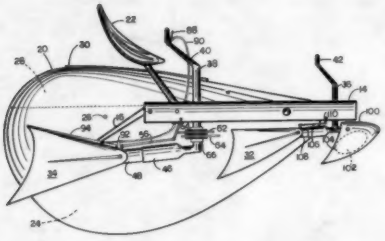
RECREATIONAL WATER CRAFT

Massoud Keivanjah, 1380 Lakewood Dr., Lexington, Ky. 40502

Filed May 28, 1985, Ser. No. 738,398

Int. Cl.[4] B63H *16/04*

U.S. Cl. 440—15 **16 Claims**



1. A water craft, comprising:

frame means;

flotation and balance means mounted to said frame means;

paddle means including a fore fin primarily for steering the craft and an aft fin primarily for propelling the craft, each fin being mounted to said frame means for lateral oscillation about a substantially vertical axis; and

means for varying the length of said paddle means during operation so as to increase the driving force of said paddle means to said craft.

4,642,057

SHOCK ABSORBING PROPELLER

Michael E. Frazzell, Neenah, and Richard H. Snyder, Oshkosh, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 562,764, Dec. 19, 1983, abandoned.

This application Aug. 27, 1985, Ser. No. 770,006

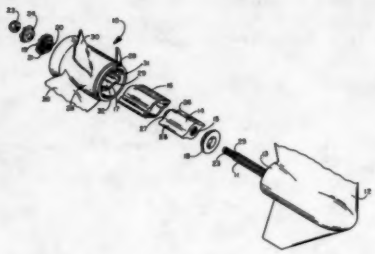
Int. Cl.[4] B63H *21/30*

U.S. Cl. 440—52 **17 Claims**

17. A propeller mounting arrangement for a marine outboard propulsion unit having an exhaust gas passage to discharge engine exhaust through a propeller hub, said propeller mounting arrangement comprising:

(A) a sleeve member having a plurality of radially outwardly extending projections positioned axially along said sleeve member and having an inner bore for drivingly engaging a propeller shaft;

(B) a single unitary propeller having an outer hub, propeller blades attached to said outer hub, an inner hub, and a plurality of vanes connecting said inner hub with said outer hub to form an exhaust gas passageway between said inner and outer hubs, said inner hub having a central bore therethrough and a plurality of channels in the wall of said central bore extending radially outward between said vanes and having walls defined by said vanes, said projections on said sleeve member extending radially outward beyond said central bore into said channels to loosely register with said channels whereby relative rotation between said sleeve member and said propeller is limited; and



(C) a single unitary cushion member encircling said sleeve member, said cushion member fitting in telescoping relationship between said sleeve member and said propeller inner hub, said cushion member engaging the walls of said channels and projections.

4,642,058

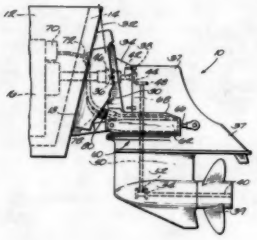
HYDRAULIC SYSTEM FOR MARINE PROPULSION DEVICES

Donald K. Sullivan, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 6, 1985, Ser. No. 731,159

Int. Cl.[4] B63H *5/12*

U.S. Cl. 440—61 **11 Claims**



1. A marine propulsion device comprising a mounting bracket adapted to be fixedly attached to the transom of a boat and having therein an opening, a propulsion unit pivotally connected to said mounting bracket for pivotal movement relative to said mounting bracket, a hydraulic cylinder/piston assembly located wholly aft of the transom and connected between said mounting bracket and said propulsion unit for effecting pivotal movement of said propulsion unit relative to said mounting bracket, a manifold fixedly attached to said mounting bracket in closing relation to said opening, said manifold being adapted to be connected to a source of hydraulic fluid inside the boat, and fluid line means communicating between said manifold and said hydraulic cylinder/piston assembly for supplying hydraulic fluid to said cylinder/piston assembly.

4,642,059

MARINE CONTRA-ROTATING PROPELLER APPARATUS

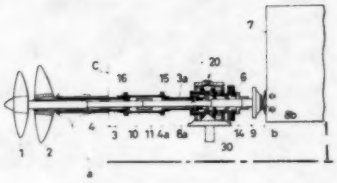
Hiroshi Nohara, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Jul. 16, 1984, Ser. No. 630,959

Claims priority, application Japan, Jul. 18, 1983, 58-110128[U]

Int. Cl.[4] B63H *23/00*

U.S. Cl. 440—75 8 Claims



1. A marine contra-rotating propelier apparatus for propelling a ship by contra-rotating propellers comprising an inner shaft having one end which is directly coupled to an output shaft of a main diesel engine and the other end to which an outside propeller is mounted, and an outer shaft having one end which is coupled to said inner shaft through a reversing transmission mechanism and an elastic coupling and the other end to which an inside propeller is mounted, said reversing transmission mechanism comprising an input bevel gear coupled to said inner shaft through said elastic coupling, a reversing bevel gear meshing with said input bevel gear, an output bevel gear meshing with said reversing bevel gear, and a fit gear mounted fixedly on said outer shaft and having outer teeth meshing with the inner teeth of said output bevel gear slidably in the axial direction.

4,642,060

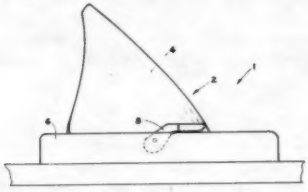
CAM LOCKED SLIDEABLE FOOT BINDER

Robert S. Scheurer, P.O. Box 539, and Kendal Hancock, both of Wichita Falls, Tex. 76307, assignors to Robert S. Scheurer, Wichita Falls, Tex.

Filed May 1, 1985, Ser. No. 729,126

Int. Cl.[4] A63C *15/06*

U.S. Cl. 441—70 9 Claims



8. Adjustable water ski foot binder apparatus comprising a slideable assembly having flexible means for overlying a foot portion and mounting means for holding the flexible means and further comprising relatively fixed slideway means for at least partially overlying the mounting means, first locking means connected to the slideway means for extending toward and away from the mounting means to lock the mounting means and slideable assembly in position on the ski,

wherein the locking means comprising an eccentric cam means connected to the slideway and lever means connected to the cam means for moving the cam means toward and away from the mounting means, and further comprising

an upwardly facing detent means on the mounting means and

wherein the cam means is movable downward into the detent means and upward away from the detent means.

4,642,061

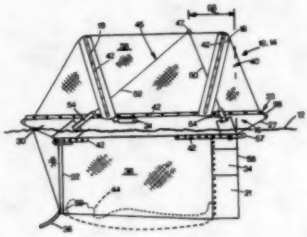
PERSONNEL RESCUE APPARATUS FOR USE ON WATER

Donald B. Arney, S.E.I., Unit 406, 5940 No. 6 Road, Richmond, British Columbia, Canada V6V 1Z1

Filed Jan. 7, 1985, Ser. No. 689,167

Int. Cl.[4] B63C *9/00*

U.S. Cl. 441—83 11 Claims



1. A rescue apparatus for rescuing a person on the surface of a body of water, the apparatus having:

(a) a body having laterally spaced, parallel, first and second elongated inflatable pontoons, and upper and lower connecting means interconnecting the pontoons, the pontoons having forward portions with upwardly and forwardly extending prow portions, the upper and lower connecting means being bowed upwardly and downwardly respectively to provide an opening between the pontoons to receive the person, the lower connecting means having a leading portion positioned aft of the forward portions of the pontoons to permit the forward portions of the pontoons to be supported on a receiving surface to facilitate unloading of the apparatus, the body also having flotation means cooperating with the upper connecting means to assist in self-righting should the apparatus tip,

(b) first and second thrusters cooperating with the lower connecting means so as to be sufficiently below the first and second pontoons respectively to provide a relatively low centre of gravity for the body to resist tipping and to assist in self-righting should the apparatus tip, the thrusters being adapted to be below the surface and to receive power and control signals to control movement of the apparatus on the surface,

(c) a net enclosure enclosing the pontoons and the connecting means, the net enclosure having an opening adjacent the forward portions of the pontoons to receive the person.

4,642,062

NOSE WEIGHT FOR TOY AIRCRAFT

Michael K. Dorffler, Canon City, Colo., assignor to Damon Corporation, Needham, Mass.

Filed Jul. 3, 1985, Ser. No. 751,437

Int. Cl.[4] A63H *27/00*

U.S. Cl. 446—68 12 Claims

1. In a toy aircraft having

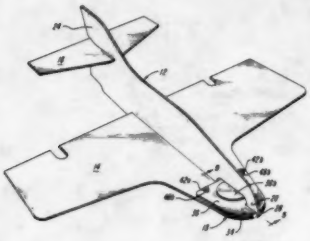
a fuselage panel normally oriented vertically and having means for mating to a wing panel, and

at least a first wing panel normally oriented horizontally, said wing panel removably and replaceably matable with said fuselage panel,

the improvement comprising

weight holding means with opposed and conjoined first and second clamping jaw members, said jaw members being joined by hinge means,

said weight holding means being removably and replaceably mounted upon one said panel, and



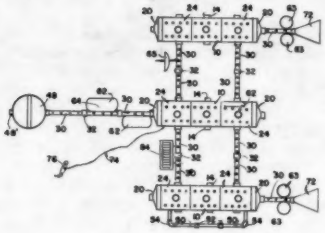
at least one of said jaw members having a weight seating chamber for removably and replaceably receiving a weighted object and fixedly securing it to said aircraft at a selected location thereon.

4,642,063

SPACE TOY CONSTRUCTION KIT

Douglas Gillette, 6321 N. Washtenaw St., #3, Chicago, Ill. 60659

Filed Aug. 22, 1983, Ser. No. 524,997
Int. Cl.[4] A63H *17/00*
U.S. Cl. 446—94 **7 Claims**



1. A knockdown toy that is capable of being assembled into a variety of shapes and configurations resembling a space ship or space station comprising, in combination:

a plurality of similarly-shaped and similarly-sized engineering modules, each said engineering module having a diameter and a substantially three-dimensional configuration and comprising a first end and a second end, each of said first and second ends comprising means for attaching said respective end to an adjacent end of another one of said engineering modules; said plurality of engineering modules being capable of being combined in a series such that they are aligned end to end where each said engineering module is directly connected to another engineering module through respective adjacent ends thereof; each of said engineering modules further comprising at least one hole formed along at least a portion of the circumference thereof in which may be received a rod or the like; and at least one hollow projecting sleeve portion extending outwardly from a portion of the outer-circumferential portion of each of said engineering modules, said at least one hollow projecting sleeve portion simulating an air lock of a space station, and being connectable to another toy component, and having an interior end portion spaced from said portion of the outer circumference;

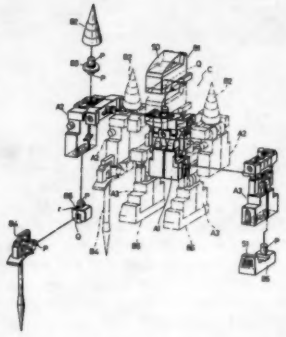
at least one storage tank component designed to simulate a fuel storage tank or oxygen storage tank, said at least one storage tank component comprising a main body having at least one hole formed at a portion of the outer circumference of said main body portion; and further comprising a plurality of insertion pins for connecting said at least one tank into said at least one hole formed along at least a portion of the circumference of each of said engineering modules.

4,642,064

ASSEMBLAGE TOY

Hideaki Yoke, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1985, Ser. No. 715,117
Claims priority, application Japan, Mar. 23, 1984, 59-56935
Int. Cl.[4] A63H *17/00*
U.S. Cl. 446—94 **12 Claims**



1. An assembly toy comprising:

a robotic assemblage having a robotic humanoid form including a body, a head mounted to the top of the body, a pair of arms pivotally mounted at the right and the left upper sides of the body, a pair of legs pivotally mounted to the right and the left lower portions of the body and a pair of stand members at both upper sides of the body, the interval between the stand members is substantially equal to that between the outer side ends of the legs;

an optional assemblage element; and

interconnecting means for providing a connection to the optional assemblage element, are provided on each of the body, head, arms and legs of the robotic assemblage and include either a projection or a recess, the optional assemblage element includes a complementarily interconnecting means to enable attachment to the robotic assemblage.

4,642,065

EXTENSIBLE GAME CALLER WITH REMOVABLE MOUTHPIECE

Parker Whedon, 11322 Carmel Chace Dr., Charlotte, N.C. 28226, and Larry J. Hearn, Rte. 2, Box 217, Medon, Tenn. 38356

Filed Sep. 3, 1985, Ser. No. 771,619
Int. Cl.[4] A63H *5/00*; G10D *7/00*
U.S. Cl. 446—209 **10 Claims**

10. A turkey caller enabling a user to imitate the sound of a specific turkey being hunted, said turkey caller including a mouthpiece at one end, an intermediate throat and a trumpet at the other end and having an air passage therethrough of progressively smaller diameter as it extends from the trumpet to the mouthpiece, means mounting said trumpet for movement relative to the throat to change the overall length of the air passage through the turkey caller, and means for changing the

air volume of the mouthpiece, whereby each mouthpiece will produce a basic selected sound and the selected length of the

air passage through the turkey caller will modify the basic sound produced by the mouthpiece.

4,642,066

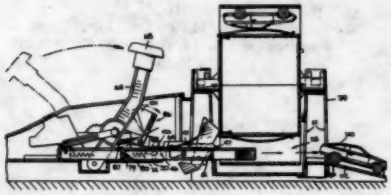
TOY VEHICLE LAUNCHER AND SOUND GENERATOR

Melvin R. Kennedy, 22 Lynn Ct., Hampton Bays, N.Y. 11946; Dietmar Nagel, 147 South Rd., Chester, N.J. 07930, and Avi Arad, Minuteman Hill, Westport, Conn. 06880

Filed May 30, 1985, Ser. No. 739,154

Int. Cl.[4] A63H *5/00*

U.S. Cl. 446—420 **17 Claims**



1. An apparatus for launching objects, comprising:

a frame;

a magazine, removably disposed on said frame, having a plurality of chambers therein, each of said chambers having a first opening therein communicating with a second opening therein;

a first ram, disposed on said frame, movable between a first and a second position, said first ram being clear of said magazine in said first position;

a second ram, disposed on said frame, movable between a third and a fourth position, said second ram being clear of said magazine in said third position,

said magazine being positionable on said frame to simultaneously align a first and a second of said chambers with, respectively, said first and second rams so that said first ram in moving from said first to said second position passes into said first chamber through said first opening thereof, and said second ram in moving from said third to said fourth position passes into said second chamber through said first opening thereof;

an arm, pivotally disposed on said frame, movable between a fifth and a sixth position;

means, coupled to said arm, for transmitting motion of said arm to said first and second rams so that movement of said arm from said sixth to said fifth position engenders movement of said first ram from said second to said first position, and movement of said second ram from said fourth to said third position, and so that movement of said arm from said fifth position to said sixth position does not engender movement of said first and second rams;

means, affixed to said frame and said first ram, for urging said first ram from said first position to said second position;

means, affixed to said frame and said second ram, for urging said second ram from said third position to said fourth position;

means, disposed on said frame, for selectively fixing and releasing said first ram in said first position;

means, disposed on said frame, for selectively fixing and releasing said second ram in said third position; and,

means, disposed on said frame and on said first and second rams, for fixing said first and second rams in, respectively, said first and third positions, and for releasing said first and second rams in, respectively, said first and third positions upon movement of said arm to a predetermined position.

4,642,067

PROTECTIVE BELLOWS ASSEMBLY WITH PLUGGED LUBRICATING APERTURE

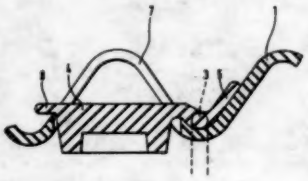
Hubert Geisthoff, and Theo Buthe, both of Lohmar, Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 21, 1986, Ser. No. 842,543

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1985, 3511578

Int. Cl.[4] F16C *1/26*; F16D *3/84*

U.S. Cl. 464—175 **4 Claims**



1. A protective bellows assembly for a joint particularly useful with a drive shaft for driving an agricultural implement from a power takeoff shaft of a tractor comprising:

a resilient bellows member having formed therein a series of folds and an aperture through which a joint upon which said bellows member is mounted may be lubricated;

a removable plug for sealing said aperture;

a resilient ring extending around said bellows in one of said folds having said plug connected thereto;

at least one lug member on said plug for facilitating manual movement of said plug; and

retention means provided on said plug engaging within one of said folds tending to retain said plug within said aperture.

4,642,068

APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION

Akinori Osanai, and Takao Niwa, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 25, 1984, Ser. No. 654,025

Claims priority, application Japan, Sep. 28, 1983, 58-177892; Oct. 17, 1983, 58-192582

Int. Cl.[4] F16H *11/06*

U.S. Cl. 474—11 **4 Claims**

1. An apparatus for controlling a continuously variable transmission for a vehicle, which vehicle has an engine having a thfottle valve and a torque control system for controlling the

amount of fuel to be supplied to the engine, in accordance with the engine speed and a parameter of engine load, said transmission comprising:

a hydraulic pressure operated variable width first pulley assembly connected to the engine;

a hydraulic pressure operated variable width second pulley assembly connected to the vehicle;

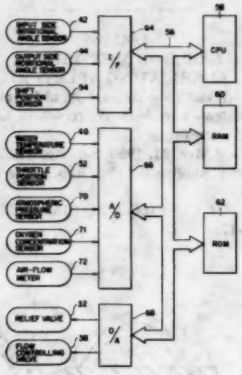
a belt looped between the first and the second pulleys for transmitting engine power to the vehicle;

a hydraulic pressure source;

first hydrualic line connecting said source with the first pulley assembly for generating a hydraulic pressure for engaging the first pulley with the belt;

second hydraulic line connecting the source with the second pulley assembly for engaging the second pulley with the belt;

first detecting means for detecting the position of the throttle valve;



first calculating means for calculating a value of control pressure so as to obtain a speed ratio which is a ratio of the vehicle speed to the engine speed and is determined by the detected position of the throttle valve;

first control valve means arranged in one of the first and the second hydraulic lines for controlling a pressure therein to said control pressure;

second detecting means for detecting the engine speed;

third detecting means for detecting atmospheric pressure;

means for calculating an actual torque as a function of the engine speed, position of throttle valve and atmospheric pressure;

second calculating means for calculating a value of line pressure so as to obtian the minimum pressure for engaging the belt with the pulley, which pressure is determined in accordance with the calculated engine torque, and;

second control valve means arranged in the other of the first and the second pressure line for controlling a pressure therein to said calculated line pressure.

4,642,069

HYDRAULIC CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE TRANSMISSION

Daisaku Sawada, Gotenba; Masami Sugaya, Susono; Ryuji Imai, Toyota, and Yoshinobu Soga, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

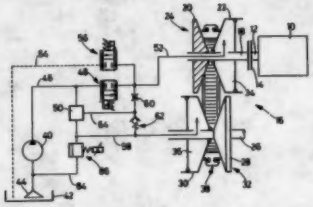
Filed Oct. 2, 1985, Ser. No. 782,903

Claims priority, application Japan, Oct. 4, 1984, 59-208963

Int. Cl.[4] F16H *11/04*

U.S. Cl. 474—28 **6 Claims**

1. A hydraulic control system for a continuously variable transmission having a first and a second variable-diameter pulley provided on a first and a second shaft, a transmission belt connecting the first and second pulleys to transmit power from one of the first and second pulleys to the other, and a pair of hydraulic cylinders for changing an effective diameter of the pulleys engaging the belt, the hydraulic control system including a hydraulic source deliverying a pressurized fluid, and a flow control device for controlling a flow of the pressurized fluid from said hydraulic source into one of said hydraulic cylinders, and a flow of the fluid from said one hydraulic



cylinder, thereby changing the effective diameters of the pulleys to vary a speed ratio of the transmission, said hydraulic control system comprising:

a pressure regulating device for regulating said pressurized fluid which is delivered from said hydraulic source and applied to said flow control device so that a pressure of said pressurized fluid is higher than a pressure in said one hydraulic cylinder by a predetermined value.

4,642,070

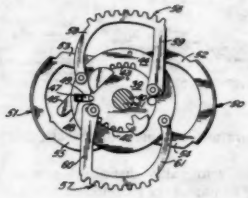
AUTOMATIC VARIABLE SPEED TRANSMISSION

Harold L. Walker, Dunedin, Fla., assignor to Albert C. Nolte, Jr., Jericho, N.Y., a part interest

Continuation of Ser. No. 314,606, Oct. 26, 1981, abandoned. This application Sep. 19, 1985, Ser. No. 777,908

Int. Cl.[4] B62M *9/08*

U.S. Cl. 474—57 **14 Claims**



1. An automatic variable speed transmission comprising:

a drive shaft;

a first disc fixed to said drive shaft for rotation therewith;

a second disc mounted for rotation about said drive shaft;

a pair of circumferentially spaced diametrically disposed drive segments, each of said drive segment being mounted to both said first disc and said second disc for radial movement relative to said drive shaft in unison, in the same direction and to the same degree to a radially outermost position, a radially innermost position and to intermediate positions therebetween, upon relative rotational movement of said first disc and said second disc, each said drive segment comprising peripheral means for driving engagement with a driven element within the same sector of revolution in all positions of said drive segments;

a spiral spring positioned around said shaft, means mounting one end of said spring radially inwardly of the periphery of said discs for rotation with said shaft and said first disc, means mounting the other end of said spring to said second disc, said spring biasing said second disc against rotational movement in one direction and to rotate in the other direction to move said drive segments radially outwardly

towards their respective outermost positions, radially inward pressure on said drive segments causing said second disc to rotate against the bias of said spring in said one direction and movement of said drive segments radially inwardly to their respective innermost positions; and

interacting locking means having respective operable interlocking elements located on said first disc and on said second disc and being relatively moveable from and to a normally locked position to and from an activated released position for releasably locking said first disc and said second disc against relative rotational movement, said respective operable interlocking elements on said discs being disposed radially inwardly of the outermost positions of said peripheral means of said drive segments when in the locked position, said interacting locking means including a member extending axially from one of said respective elements, said member comprising means for contacting a controller externally of said tranmsission while rotating and during each cycle of rotation thereof for moving said one of said elements out of engagement with the other during relative rotation of the shaft and disc, said member being located to comprise means for releasing said first and second discs for relative rotational movement during each cycle of rotation thereof when said member is contacting the external controller and when one of said drive segments is in driving engagement with the driven element and the other said drive segment is out of engagement with the driven element;

said drive shaft comprises a pedal crank rotatable by bicycle pedals;

said peripheral means of said drive segments comprise chain sprockets and said tranmission further comprises, as the driven element, a sprocket chain on said drive segment chain sprockets, means are provided for maintaining said sprocket chain under tension, the tension of said chain and the torque resulting from pedalling with drive shaft counteracts the biasing force of said spring and moves said segments inwardly, rotating said second disc in said one direction, when said locking elements are out of engagement; and

each of said drive segments is bifurcated and comprises one leg integral with one end of said segment and extending radially inwardly and pivotally mounted at its inner end to said first disc and another leg integral with the other end of said segment and extending radially inwardly and pivotally mounted at its inner end to said second disc.

4,642,071

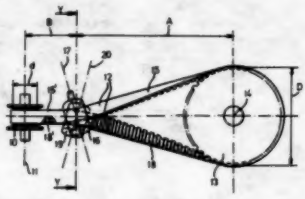
TOOTHED BELT DRIVE BETWEEN OBLIQUE SHAFTS

Guilio Botton, Via Giambellino 44, 20146 Milano, Italy

Filed Jun. 20, 1985, Ser. No. 747,105

Int. Cl.[4] F16H 7/00

U.S. Cl. 474—63 **4 Claims**



1. A toothed belt drive for acting between a pair of oblique shafts, said drive comprising:

reaction and guide rollers located between gears of the two shafts and acting on the back of branches of the belt,

a projection of an axis of each roller on a plane perpendicular to a line joining the centers of the two shafts has a direction substantially intermediate, for each branch of the belt, to that of the immediately preceding roller or shaft and the one of the immediately following roller or shaft,

the roller closest to a smaller gear of said gears, in each branch of the belt, has a distance from the joining line which is less than to the radius of said smaller gear,

a projection of the center of said closest roller on the joining line has a distance from an axis of the smaller gear which is inferior or substantially equal to the value of the expression $Ld/(d+D)$, "L" being the distance between the axis of the two gears, "d" and "D" being diameters of the smaller and a larger gear of said gears respectively,

the axis of inclination of each roller from said plane perpendicular to the joining line is so chosen that the roller axis is lined up with the belt teeth passing at the center of the roller contact area.

4,642,072

DERAILLEUR FOR A BICYCLE

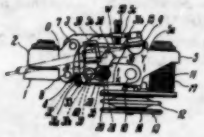
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Dec. 20, 1983, Ser. No. 563,578

Claims priority, application Japan, Dec. 27, 1982, 57-229404; Dec. 28, 1982, 57-234456

Int. Cl.[4] F16H 9/00

U.S. Cl. 474—82 **10 Claims**



1. A derailleur for a bicycle for switching a driving chain from one sprocket to another at a multistage sprocket assembly at the bicycle, comprising: a derailleur body comprising a base member, a movable member having a chain guide, and a support means which supports said movable member movably axially of said multistage sprocket assembly; an operating means which movably operates said movable member at said derailleur body; and an adjusting means which adjusts an amount of movement of said movable member in an axial direction of said multistage sprocket assembly with respect to a constant amount of operation of said operating means.

4,642,073

GUIDE FOR FLEXIBLE ENDLESS DRIVE MEMBER

Amedeo Ancarani Restelli, Cernusco Lombardone, Italy, assignor to Societa' Italiana Catene Calibrate Regina S.p.A., Milan, Italy

Continuation of Ser. No. 345,794, Feb. 4, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 648,615

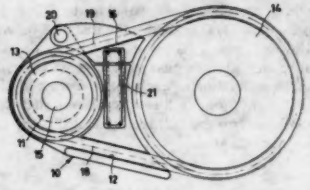
Claims priority, application Italy, Feb. 6, 1981, 19578 A/81

Int. Cl.[4] F16H 7/08

U.S. Cl. 474—111 **3 Claims**

3. In a drive system which includes a flexible endless drive member looped over a rotatable member mounted on a shaft and at least one other rotatable member and having during operation a taut lap and a slack lap adjacent the rotatable member, each lap having an inner surface and an outer surface the improvement comprising a rocking guide pad which includes first and second parts, said first part including a hub portion having a bore therethrough mounted for free rotation on said shaft and having a non-rotatable rigid guide channel

extending from said hub portion, said channel having sides facing each other in a direction transverse to the axis of said bore, said channel being so located as to receive and engage between its sides the inner and outer surfaces of the taut lap of the endless drive member, said second part of said guide pad being pivotally connected to said first part for swinging motion



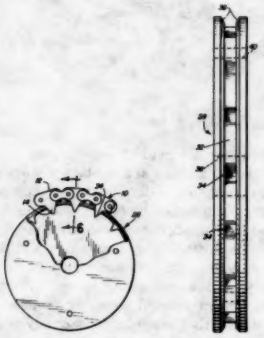
about an axis which is parallel to the axis of said bore and which is located adjacent said bore, said second part having a planar guideway so located as to be engageable with the inner surface of the slack lap of the endless drive member, and bias means connected between said first and second parts and resiliently urging said second part toward the slack lap.

4,642,074

CHAIN-SPROCKET DRIVE

Charles F. Phillips, Newfield, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 3, 1985, Ser. No. 771,723
Int. Cl.⁴ F16H *7/06*
U.S. Cl. 474—156 **9 Claims**



1. A power transmission drive chain and sprocket combination comprising:

a series of individual links each having a single depending toe or tooth defined by generally straight converging flanks and a pair of spaced apertures;

alternate pairs of toeless or toothless links joining said series of links, one on each side of said links of said series and each having an aperture aligned with an aperture of a link of said series of links;

pivot means in each set of aligned apertures and joining said links to form a chain; and

a sprocket having a pair of circular members spaced apart by a central generally circular spacer having a diameter less than that of said members and a thickness slightly in excess of the thickness of said toed links, said central spacer having a plurality of spaced cavities substantially equal to the dimensions of said toes of said toed links and each cavity being adapted to be substantially fully engaged by said toed links in sequence.

4,642,075

MULTIPLE SPROCKET WHEEL

Satoshi Nagashima, Souka, Japan, assignor to Sakae Ringyo Co., Ltd., Japan

Filed Jun. 4, 1985, Ser. No. 741,184
Claims priority, application Japan, Dec. 29, 1984, 59-198720[U]
Int. Cl.⁴ F16H *55/12*
U.S. Cl. 474—160 **4 Claims**

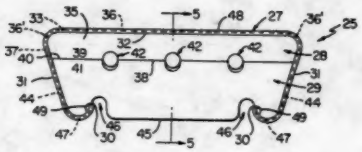
1. A multiple sprocket wheel assembly, comprising a chain guard of one diameter and a plurality of sprockets having diameters successively less than the chain guard diameter and spaced from the chain guard and each other at predetermined intervals in generally parallel relationship in the order of decreasing diameter, each sprocket having a plurality of teeth equispaced from each other around the entire periphery of the sprocket, and a plurality of connecting segments connecting said sprockets together and to the chain guard, each segment being provided between selected adjacent teeth of an associated sprocket without interrupting the equispaced relationship of said teeth on their sprocket, and adjacent ones of said connecting segments being circumferentially spaced from each other by least two teeth, said chain guard, sprockets and connecting segments being formed from a common plate.

4,642,076

BELT CONSTRUCTION CLIP FOR A TRANSVERSE BELT ELEMENT THEREFOR AND METHOD OF MAKING THE SAME

Anderson W. Howerton, Christian County, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 575,434, Jan. 30, 1984, Pat. No. 4,552,550. This application Aug. 22, 1985, Ser. No. 768,371
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.⁴ F16G *1/22*
U.S. Cl. 474—201 **18 Claims**



10. In a method of making a clip for a transverse belt element for an endless power transmission belt construction having an endless flexible carrier means that has a longitudinal axis and a plurality of said transverse belt elements assembled thereon with each said belt element comprising a plurality of parts secured together to define opening means passing transversely therethrough for receiving said carrier means therein, the improvement comprising the step of forming said clip to com-

prise one of said parts of said belt element and to comprise a generally C-shaped clip that in a direction substantially transverse to said longitudinal axis of said carrier means is adapted to snap over and hold the remaining parts of said belt element in their assembled relation.

4,642,077

V-BELT TRANSMISSION APPARATUS

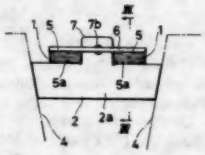
Torao Hattori, Wako; Minoru Nishimura, Sagamihara, and Masaki Goto, Fujinomiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Fukui Sinta Kabushiki Kaisha, both of Tokyo, Japan

Filed Apr. 24, 1986, Ser. No. 855,295

Claims priority, application Japan, Apr. 25, 1985, 60-87471

Int. Cl.⁴ F16G *1/00*

U.S. Cl. 474—201 **4 Claims**



1. A V-belt transmission apparatus comprising endless metallic belt means and a plurality of V-shaped metallic members disposed in series in a stacked condition along on said endless metallic belt means, said apparatus being arrangeable around a driving pulley and a driven pulley so as to enable power transmission between the two pulleys; said metallic belt means comprising at least two metallic belts disposed laterally in parallel one with another, each V-shaped metallic member being provided with laterally open, channel-shaped grooves made on both sides thereof, said metallic belt on each side being inserted in the channel-shaped groove on the corresponding side; each V-shaped metallic member comprising a main body having a projection portion, and a stopper member prepared separately from and attached to the main body of the V-shaped metallic member forming upper wall portions defining the channel-shaped grooves on both sides and facing outer surfaces of the metallic belts on both sides, the main body of the V-shaped metallic member being open upwardly on both sides of said projection portion thereof which is closed with the stopper member defining the channel-shaped grooves therebelow on both sides.

4,642,078

TRANSMISSION CHAIN

Guy Dupoyet, St. Laurent, France, assignor to Compagnie des Transmissions Mecaniques Sedis, Levallois-Perret, France

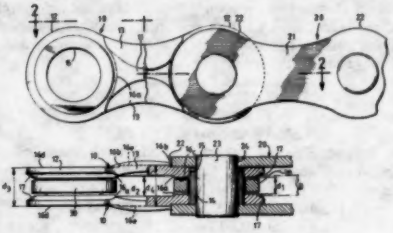
Filed Aug. 2, 1985, Ser. No. 761,706

Claims priority, application France, Aug. 3, 1984, 84 12358

Int. Cl.⁴ F16H *13/02*

U.S. Cl. 474—206 **11 Claims**

1. A transmission sprocket chain of the type comprising inner links consisting of two inner plates disposed parallel, outer links articulated on the inner links and likewise consisting of two outer plates disposed parallel to each other and parallel to said inner plates, the inner plates and the outer plates each defining a central zone and two end zones, the inner plates having inner and outer faces, being deformed in their end zones on both their faces so as to define projecting portions directed towards the interior of the chain, the outer plates of each outer link being connected by two pivot pins extending between the end zones of the inner plates, wherein said inner faces of the inner plates are separated by a distance less than the minimum distance between the central zones of the inner plates and less



than the thickness of the roots of the teeth of the sprockets with which the chain has to cooperate.

4,642,079

TRANSMISSION CHAIN

Alexandre Horowitz; Martinus H. Cuypers, both of Eindhoven, and Jacobus H. M. van Rooji, Nuenen, all of Netherlands, assignors to Volvo Car B.V., Netherlands

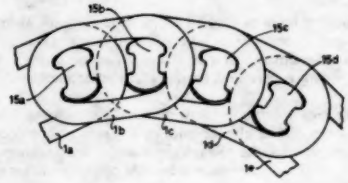
Filed Mar. 10, 1982, Ser. No. 356,750

Claims priority, application Netherlands, Mar. 10, 1981, 81 01166; Jun. 15, 1981, 81 02868; Nov. 9, 1981, 81 05056

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.⁴ F16G *13/02*

U.S. Cl. 474—219 **20 Claims**



1. A transmission chain comprising:

a plurality of link units each having first and second opposite end portions for intercoupling to adjacent link units, the end portions of each link unit being spaced apart in a link longitudinal direction, each link unit end portion having a respective surface facing toward and spaced apart from the respective surface of the other end portion of that link unit, each end portion surface including first and second opposite spaced apart end sections and a respective contact surface section between the first and second end sections, the contact surface section being offset from the end sections in the link longitudinal direction; and

a plurality of pins, each pin having first and second opposite side surfaces extending in a pin longitudinal direction transverse to the link longitudinal direction, each pin side surface including first and second opposite spaced apart end sections and a central side section between the first and second end sections, the central side section being offset from the end sections in the link longitudinal direction; the central side section of the first side surface of each pin being shaped for rolling engagement against the respective contact surface section of the first end portion of a corresponding first one of the link units, the central side section of the second side surface of that pin being shaped for rolling engagement against the respective contact surface section of the second end portion of an adjacent corresponding second one of the link units;

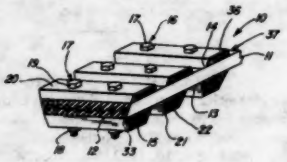
at the rolling engagement between one of the central side sections of one of the pins and the respective contact surface section of the corresponding one of the link unit end portions, the central side section and the respective contact surface section each being offset in the link longitudinal direction for fitting one into the other and each having a radius of curvature which differs from the radius of curvature of the other.

4,642,080

POWER TRANSMISSION BELT

Hiroshi Takano; Shinichi Takagi, and Kiyokazu Wada, all of Hyogo, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Feb. 1, 1985, Ser. No. 697,445
Int. Cl.⁴ F16G *1/21*
U.S. Cl. 474—244 **39 Claims**



1. A power transmission belt for transmitting high loads, said belt comprising:

an elastomeric flat belt portion defining an outer surface and an inner surface;

a tensile cord extending longitudinally in said flat belt portion;

a plurality of pairs of aligned longitudinally, equally spaced first and second blocks adjacent said outer and inner surfaces respectively of the flat belt portion, each block comprising a core and fabric wrapped around said core; and

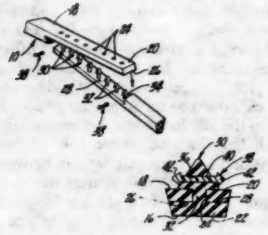
securing means extending through said flat belt portion and the cores of the aligned blocks for removably securing said aligned blocks to said outer and inner surfaces, said blocks of the aligned pairs mutually defining anchor plates for each other.

4,642,081

ADJUSTABLE DRIVE BELT

Robert J. Balomenos, 5726 Appoline, Dearborn, Mich. 48126

Filed Jun. 7, 1985, Ser. No. 742,407
Int. Cl.⁴ F16G *7/06*
U.S. Cl. 474—253 **14 Claims**



1. An adjustable drive belt comprising:

a main belt having spaced apart elongated inner and outer surfaces, said main belt having a first end and a second end, said first end having an intermediate lower surface spaced a first predetermined distance from said outer surface and at least one aperture extending from said outer surface to said intermediate lower surface, said at least one aperture having a predetermined diameter, said second end having an intermediate upper surface spaced a second predetermined distance from said inner surface; and

means for fastening said first end of said belt to said second end of said belt to form an endless drive belt, said means for fastening comprising;

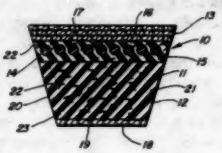
at least one projection extending outwardly from said intermediate upper surface of said second end in a direction away from said inner surface, said at least one projection having a cylindrical base extending from said intermediate upper surface and a head portion formed at an end of said cylindrical base and adapted to be received in said at least one aperture of said first end, said head portion having a predetermined maximum diameter greater than said predetermined diameter of said at least one aperture such that said head portion extends through said at least one aperture to securely connect said first end to said second end to form said endless drive belt.

4,642,082

POWER TRANSMISSION BELT

Satoshi Mashimo, Akashi; Hajime Kakiuchi, Itami, and Masayoshi Nakajima, Ashiya, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed Jul. 26, 1985, Ser. No. 759,466
Claims priority, application Japan, Jul. 26, 1984, 59-156591
Int. Cl.⁴ F16G *5/06*
U.S. Cl. 474—260 **15 Claims**



1. In a power transmission belt having a raw-edged inner compression section, an outer tension section, and a plurality of longitudinally extending tensile cords intermediate said compression and tension sections, the improvements comprising:

said compression section comprising a rubber composition having dispersed therein ceramic powder present in the amount of approximately 2 to 100 parts of ceramic powder to 100 parts of rubber by weight, said ceramic powder being formed of at least one of the group consisting of silicon carbide, titanium carbide, boron carbide, tungsten carbide, silicon nitride, aluminum nitride, boron nitride, titanium nitride, alumina, zirconia, and Beryllia.

4,642,083

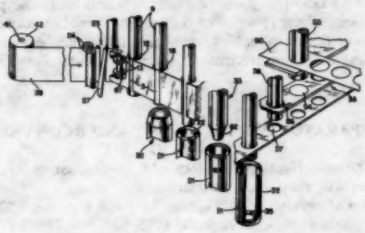
METHOD AND APPARATUS FOR MAKING AND MANIPULATING INNER TUBES FOR USE IN DRY CELLS OR THE LIKE

Alfred Hinzmann, Weams, Va., assignor to Hauni-Richmond, Inc., Richmond, Va.

Filed Jul. 12, 1985, Ser. No. 754,622
Int. Cl.⁴ B31C *3/02*
U.S. Cl. 493—93 **39 Claims**

1. A method of introducing inner tubes into outer tubes, comprising the steps of converting a series of discrete sheets of flexible material into inner tubes including feeding successive sheets of the series into an annular clearance which is disposed between the internal surface of an outer tool and the peripheral surface of an inner tool, and rotating one of the tools about the axis of the clearance to wind the sheet around the inner tool; advancing each of the thus obtained inner tubes axially into a

discrete outer tube, including moving the inner tool with the inner tube into the respective outer tube; rotating the inner tool relative to the inserted inner tube in a direction to promote



radial expansion of the inner tube and separation of the thus expanded inner tube from the inner tool; and thereupon extracting the inner tool from the inner tube.

4,642,084

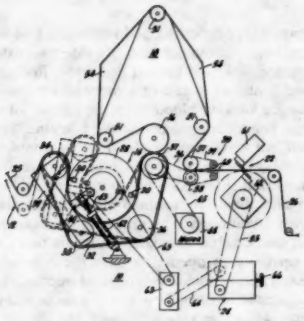
PLASTIC BAG MAKING MACHINE

Peter J. Gietman, Jr., Combined Locks, Wis., assignor to Custom Machinery Design, Inc., Appleton, Wis.

Division of Ser. No. 641,768, Aug. 17, 1984, Pat. No. 4,567,984. This application Nov. 1, 1985, Ser. No. 793,851

Int. Cl.[4] B31B *23/16*

U.S. Cl. 493—190 **13 Claims**



1. A machine for making plastic bags from plastic film moving along a longitudinal path comprising:

drum-shaped rotatable sealing means along said path for sealing said film transversely, having at least one sealing bar thereon and means for driving said sealing means operatively associated therewith,

blanket means surrounding a portion of said sealing means, said blanket means comprising a continuous belt,

means for driving said blanket means operatively associated therewith,

means along said path for both cutting and perforating said film transversely to form easily separable interconnected bags, and

folding means located along said path intermediate said sealing means and said cutting and perforating means comprising one or more boards, for folding the film along lines parallel to the direction the film is moving, and

wherein the diameter of said sealing means is infinitely variable between a first size in which said sealing means has a first diameter and a second size in which said sealing means has a second and larger diameter.

4,642,085

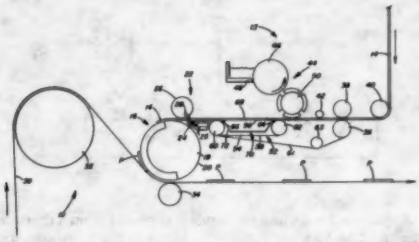
APPARATUS FOR MAKING WINDOW PATCHES

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Continuation-in-part of Ser. No. 383,117, May 28, 1982, abandoned. This application Apr. 9, 1985, Ser. No. 721,201

Int. Cl.[4] B31B *1/82*

U.S. Cl. 493—222 **18 Claims**



1. Apparatus for severing window patches from a web of patch material:

having a first surface and a second surface;

said apparatus defining a linear feed path having an upstream end and a downstream end;

web feeding means at said upstream end of said linear feed path;

adhesive applying means located along said linear feed path beyond said web feeding means for applying adhesive to selected portions of said first surface of said web of patch material;

a vacuum roll located along said linear feed path beyond said adhesive applying means and having a peripheral surface for engaging said second surface of successive window patches with said adhesive on said first surface thereof;

severing means positioned along said linear feed path between said adhesive applying means and said vacuum roll for severing said successive window patches of a preselected length from a leading end of said web while a portion of said leading end of said web is engaged with said surface of said vacuum roll;

a vacuum conveyor positioned along said linear feed path between said adhesive applying means and said severing means, said vacuum conveyor being operable to advance said web with said adhesive on said first surface of said web along said linear feed path from said adhesive applying means toward said severing means; said vacuum conveyor having a receiving end positioned adjacent said adhesive applying means for receiving said web after said adhesive is applied to said first surface thereof, said vacuum conveyor having a discharging end spaced upstream from said severing means in said linear feed path;

said severing means being positioned in said linear feed path between said discharging end of said vacuum conveyor and said vacuum roll;

said severing means being spaced from said discharging end of said vacuum conveyor with said vacuum roll being spaced from said severing means to provide an extended linear distance between said discharging end and said vacuum roll for pushing said web by a conveying action of said vacuum conveyor from said discharging end to said severing means, and

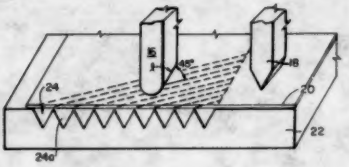
said vacuum conveyor being constructed and arranged for pushing said web along said linear feed path from said discharging end a preselected distance through said severing means and therefrom to the point where said portion of said leading end of said web is engaged with said peripheral surface of said vacuum roll prior to said severing means severing each window patch from said leading end of said web.

4,642,086

APPARATUS FOR FORMING FLEXIBLE FOLD LINES IN A THERMOPLASTIC SHEET

Robert A. Howarth, Jr., Ringwood, N.J., assignor to Transparent Packaging Corp., Wood Ridge, N.J.

Filed Jul. 29, 1985, Ser. No. 759,879
Int. Cl.[4] B05B *1/14*
U.S. Cl. 493—341 8 Claims



1. Apparatus for forming foldable box blanks from a thermoplastic sheet by forming flexible fold lines in the thermoplastic sheet which has an upper and lower surface, comprising:

scoring means including a plurality of scoring tools each having a longitudinal axis;

a flat plate disposed opposite to said scoring tools for supporting said thermoplastic sheet, said flat plate having a plurality of sets of grooves formed therein at locations corresponding to and opposite to said scoring tools;

the longitudinal axes of said grooves being offset relative to the longitudinal axes of said scoring tools;

means for heating said scoring tools to less than the melting temperature of said thermoplastic sheet; and

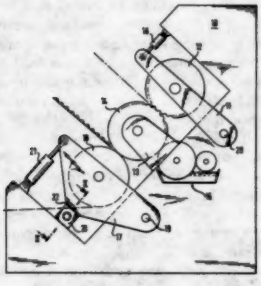
means for moving said heated scoring tools into engagement with said thermoplastic sheet to soften said thermoplastic sheet so that is is deformed on its upper surface by said scoring tools and so that it is deformed on its lower surface by the grooves in said plate, said deformed areas forming said flexible fold lines in said thermoplastic sheet.

4,642,087

ONE-SIDED CORRUGATED CARDBOARD MACHINE

Martin Hoffmann, Tangstedt, Fed. Rep. of Germany, assignor to Werner H. K. Peters Maschinen Fabrik GmbH, Hamburg, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 660,870
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1983, 8331822[U]
Int. Cl.[4] B31F *1/20*
U.S. Cl. 493—463 5 Claims



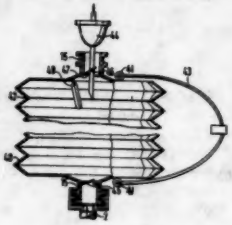
1. A one-sided corrugated cardboard machine comprising a machine stand, an upper and a lower fluted roller, a pressure roller cooperating with the lowr fluted roller, said pressure roller being pivotally supported by lever arms at the machine stand for pivotal movement toward and away from said lower fluted roller, adjustable abutment surfaces at the machine stand associated with the lever arms, an adjusting means supported at the machine stand and cooperating with the lever arms, characterized in that said adjusting means provides for adjustment of the pressure roller nip, said abutment surfaces being arranged to face the pressure roller nip and limit the pivotal movement of the lever arms only in the direction away from the lower fluted roller and permitting movement of said lever arms and said pressure roller toward said lower fluted roller.

4,642,088

APPARATUS FOR RECEIVING AND REINFUSING BLOOD

Mary Günter, Gauting, Fed. Rep. of Germany, assignor to Solco Basel AG, Birsfelden, Switzerland

Division of Ser. No. 494,094, May 12, 1983, Pat. No. 4,573,992.
This application Sep. 24, 1985, Ser. No. 779,581
Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218561
Int. Cl.[4] A61M *1/02*
U.S. Cl. 604—4 3 Claims



1. An apparatus for receiving and reinfusing a patient's own blood, comprising: a container having a side wall extending in an axial direction, first and second end walls, first connection means on said container at said first end wall for connection to a suction line for sucking blood from the patient into the container, second connection means on the container at said second end wall, for reinfusion of blood in the container into a patient; stiffening means for substantially preventing radial deformation of said side wall while permitting folding of said container in axial direction, resilient means for displacing said container from a compressed condition into an expanded condition, a first check valve associated with said first connection means and operable to open flow into the container, and a second check valve associated with said second connection means and operable to open flow out of said container, when blood is being sucked into the container, the second end wall being above said first end wall, whereas when blood in the container is reinfused into the patient said first end wall being above said second end wall by turning the container.

4,642,089

UNITARY VENOUS RETURN RESERVOIR WITH CARDIOTOMY FILTER

Paul F. Zupkas, Costa Mesa; Francis M. Servas, San Juan Capistrano; Todor Pavlov, Laguna Niguel, and Steven G. Kelly, Garden Grove, all of Calif., assignors to Shiley, Inc., Irvine, Calif.

Filed Jan. 29, 1985, Ser. No. 696,147
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—4 7 Claims

1. A device for the treatment and collection of blood from two different sources during a surgical procedure comprising

a first vertically-extending annular blood treatment element comprising in series an annular layer of porous defoaming material and an annular layer of non-woven depth filter material, said first annular blood treatment element defining an inner space within itself;

a second vertically-extending annular blood treatment ele-

ment, located directly below said first element, comprising an annular layer of porous defoaming material, with said second blood treatment element being free of any depth filter material, said second annular blood treatment element defining an inner space within itself;

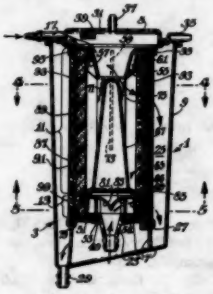
a hollow housing made of a rigid material and having a top wall, a bottom wall and a generally cylindrical side wall spaced radially outwardly from said first and second blood treatment elements;

a reservoir for collecting treated blood, at least a portion of which is defined by the outer peripheries of the first and second blood treatment elements and the adjacent side housing wall;

a gas vent in the top wall of the housing in communication with said reservoir;

a treated blood outlet in the bottom wall of the housing at the bottom of said reservoir;

a first blood inlet in said housing communication with the inner space within the first blood treatment element;



a second blood inlet in the bottom wall of said housing in communication with the inner space within the second blood treatment element, said second blood inlet being substantially vertically-extending and having a top end and a bottom end, and said top end of said second blood inlet being at substantially the same level as the adjacent bottom wall of said housing; and

means within said housing for providing first and second blood flow paths in the device, said first blood flow path being through the first inlet, the first blood treatment element, the treated blood reservoir and the treated blood outlet, and said second blood flow path being through the second inlet, the second blood treatment element, the treated blood reservoir and the treated blood outlet,

said means including an internal wall within the housing preventing liquid flow between the inner spaces within the first and second blood treatment elements and extending radially outwardly between said elements at least until the outer periphery of the layer of depth filter material in the first element.

4,642,090

DISPOSABLE COMBINATION SCALPEL BLADE AND INCISION IRRIGATOR FOR OPHTHALMOLOGICAL USE

Peter J. Utrata, 2680 Sandover Rd., Columbus, Ohio 43220

Filed Mar. 4, 1985, Ser. No. 708,137

Int. Cl.[4] A61B *17/20*

U.S. Cl. 604—22 **7 Claims**

1. A disposable combination scalpel handle blade and an incision irrigator for ophthalmological use comprising:

a hollow scalpel handle closed at one end and open at the other end,

said open end being adapted to receive and frictionally hold a flexible tube,

said closed end having a scalpel blade provided with a cutting edge thereon and fixedly secured in the closed end of said scalpel handle and extending outwardly from said closed end and approximately coaxial therewith,

said closed end of said scalpel handle also having a cannula, fixedly secured therein and extending from said closed end of said handle and disposed parallel to said scalpel blade at said closed end at an angle so that fluid flowing through

said cannula will impinge only upon the cutting edge of said scalpel blade, and said cannula being fluidwise connected to the interior of said hollow scalpel handle, whereby blood and debris from the incision being made by the cutting edge of said scalpel blade is washed away and the fluid does not obscure the surgeon's view so that the surgeon will have a clear view of the area in which he wishes to extend his incision.

4,642,091

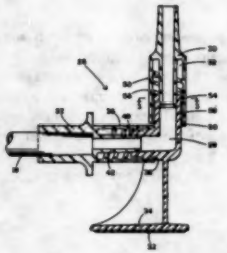
STERILANT ADDITIVE HOLDER FOR CAPD SETS

Douglass S. Richmond, Mission Viejo, Calif., assignor to Kendall McGaw Laboratories, Inc., Irvine, Calif.

Filed Mar. 8, 1985, Ser. No. 709,903

Int. Cl.[4] A61M *1/28*

U.S. Cl. 604—29 **6 Claims**



1. A sterilant-additive holder for CAPD exchange sets, comprising:

(a) a body adhesively securable to a work surface, said body having a passage extending therethrough;

(b) connector retaining means on said body for releasably retaining a CAPD set connector in aseptic communication with said passage; and

(c) cap retaining means on said body for releasably retaining a CAPD catheter connector cap in aspetic communication with said passage;

(d) said passage extending from said connector retaining means to said cap retaining means; and

(e) said cap having a portion closing off said passage when said cap is retained on said holder, the fit between said portion and said passage being sufficiently loose to allow sterilant introduced into said passage under pressure to penetrate into the interior of said cap.

4,642,092

GASTROINTESTINAL ASPIRATING DEVICE WITH SUCTION BREAKERS

Gerald Moss, R.D. #1, West Sand Lake, N.Y. 12196

Filed Dec. 10, 1984, Ser. No. 679,688

Int. Cl.[4] A61M *25/00*

U.S. Cl. 604—43 **11 Claims**

1. A feeding and aspirating device for insertion into a patient's body, comprising:

a single walled tube, having an aspirating lumen and a feeding lumen therein, said aspirating lumen having an external end portion to be disposed outside the body, said feeding lumen also having an external end portion to be disposed of outside the body, and having an internal end portion to be disposed in the proximal segment of the small bowel, said internal end portion having an orifice therein for the discharge of food; and

a set of primary aspirating orifices through said single walled tube for constant communication between the aspirating lumen and the exterior of the tube; and

a set of secondary orifices through said single walled tube for constant communication between the aspirating lumen and the exterior of the tube, said secondary orifices having openings which are positionally fixed with relation to and smaller than the primary aspirating orifices.

4,642,093

ASPIRATOR FOR WITHDRAWAL OF SECRETIONS FROM WOUNDS

Anton Härle, Drechslerweg 40, D-4400 Münster-Roxel, Fed. Rep. of Germany

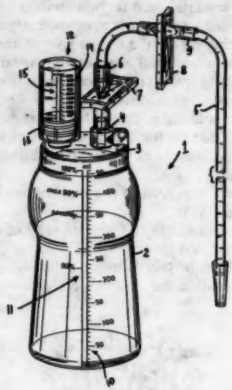
Filed Feb. 7, 1985, Ser. No. 698,987

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404382

Int. Cl.[4] A61M *31/00*

U.S. Cl. 604—54 **29 Claims**

1. An aspirator for withdrawal of secretions from wounds, comprising an evacuated vessel having a normally sealed inlet for admission of secretions into its interior; and means for indicating the maximum quantity of secretions which can enter the vessel by suction when the subatmospheric pressure in the



interior of the vessel prior to admission of secretions thereinto matches a predetermined value.

4,642,094

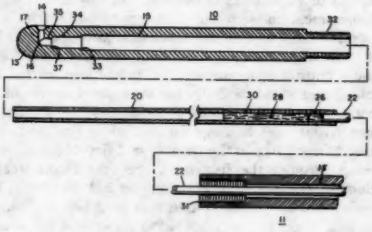
NON-SURGICAL EMBRYO TRANSFER DEVICE

Walter L. North, Jr., and Barry M. England, both of R.D. 1, Box 454, New Enterprise, Pa. 16664

Filed May 29, 1984, Ser. No. 615,072

Int. Cl.[4] A61M *1/00*

U.S. Cl. 604—55 **10 Claims**



1. A non-surgical embryo transfer device comprising in combination:

a longitudinal tip element, having a longitudinal bore partially therethrough, said longitudinal bore in communication with:

A. a medium bore of lesser diameter than said longitudinal bore adjacent to and in communication with said longitudinal bore;

B. a small bore of lesser diameter than said medium bore adjacent to and in communication with said medium bore;

C. an exit chamber positioned within the end portion of said longitudinal tip in communication with said small bore;

D. an exit passage connected with said exit chamber and leading to the surface of said longitudinal tip;

a hollow straw adapted to be inserted in said longitudinal bore, having a diameter slightly larger than said medium bore and adapted to be forced within said medium bore to form a tight fluid resistance fit with said medium bore; said

hollow straw contains a fluid vehicle therein and is comprised of, in combination:

an embryo within said fluid vehicle; and

a wadding positioned within said hollow straw adjacent to said fluid vehicle on the end portion of said straw opposite to said exit chamber;

a plunger device connected to the end portion of said longitudinal tip element, said plunger device comprising, in combination:

a plunger rod positioned within said plunger device, the end portion of said rod inserted within the end portion of said straw and adjacent to said wadding;

a thumb plate attached to the end portion of said plunger rod;

an enlarged finger grip positioned on the end portion of said plunger device, said finger grip having flat side portions thereon; said finger grip comprising of, in combination:

a circular fixed head, said circular fixed head having a circumferential groove on the lateral edge portion thereof;

a rotatable circular ring circumferentially positioned on said circular fixed head;

a threaded thumbscrew extending through said fixed head and thread engagable therewith, the end portion of said thumbscrew extending within said circumferential groove;

whereby said fixed head may be rotated about said circular fixed head and clamped thereto by said thumbscrew.

4,642,095

LOCKING MECHANISM FOR THE REMOVABLE VACCINE PUMP OF A NEEDLELESS INJECTION INSTRUMENT

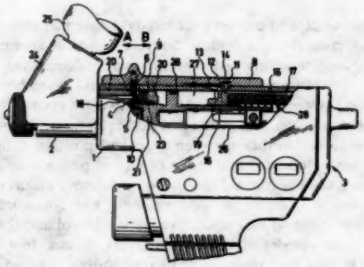
Hans-Jürgen Dettbarn, Marburg, and Josef Zimmermann, Sulzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 22, 1985, Ser. No. 757,746

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1984, 3427189

Int. Cl.[4] A61M *5/30*

U.S. Cl. 604—72 **2 Claims**



1. A locking mechanism for locking a removable vaccine pump in a needleless injection instrument with a spring-driven drive motor, said needleless injection instrument of the type including a motor housing having a cylindrical bore, a working piston having a groove and being disposed in said cylindrical bore and arranged to be displaceable between a tensioned and an untensioned position, a receiving bushing for receiving said removable vaccine pump, said bushing being disposed in said cylindrical bore, and a piston shaft attached to said working piston and displaceable in said bushing, said vaccine pump of the type including a pump housing and being releasably attached to said bushing, and a pump ram releasably attached to said piston shaft, said locking mechanism comprising:

an operating element having a recess and being displaceably connected to said motor housing;

first and second aligned openings formed in said motor housing and said bushing, respectively;

a recess formed in said pump housing and aligned with said first and second openings;

a bolt fixedly attached to said operating element and disposed in said first and second openings, said bolt being engageable with said pump housing recess for locking said pump housing to said motor housing;

spring means for biasing said bolt toward engaging said pump housing recess;

a locking device engageable with said operating element recess for locking said bolt in engagement with said pump housing recess when said working piston is in said tensioned position; and

a leaf spring fixing said locking device to said motor housing and biasing said locking device into said groove in said working piston when said working piston is in said untensioned position.

4,642,096

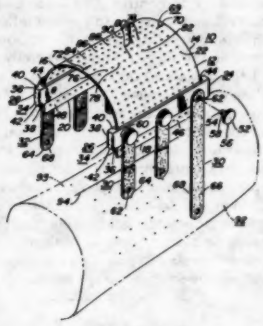
POSITION LOCATING DEVICE AND METHOD FOR INTERSTITIAL RADIOTHERAPY

Harry R. Katz, 10121 Darnuid Green Dr., Potomac, Md. 20854

Filed Jun. 29, 1984, Ser. No. 626,333

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—116 **5 Claims**



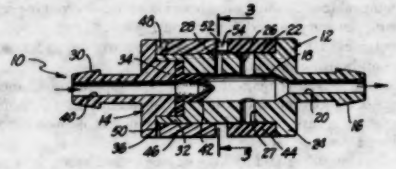
1. A position locating device for interstitial radiotherapy of a body portion comprising a flexible sheet member for being received about and conformed with a body portion which is to receive radiotherapy, the sheet member having a plurality of spaced position locating means and first and second opposite ends, and attachment means for releasably securing the sheet member about the body portion comprising joining means securing a plurality of bands with the sheet member, the joining means providing first and second clamping units each detachably secured with the sheet member proximate to a respective one of its ends for being replaced and repositioned therewith, the plurality of bands comprise first and second sets having first ends pivotably secured with a respective one of the first and second clamping units for allowing their angular adjustment with the second ends of the first set of bands being detachably securable with the second ends of the second set of bands for releasably securing the sheet member about the body portion, and each of the clamping units comprises a flat bar having a slot for receiving therethrough an end of the sheet member and a plurality of screw elements threadedly engaging a respective one of the bars for clamping and securing the sheet member therewith, and the first ends of the bands have an opening for receiving a respective screw element therethrough for securing same with the bar unit and allowing pivotal movement thereabout.

4,642,097

LEFT VENTRICAL VACUUM CONTROL AND PRESSURE RELIEF VALVE

George G. Sipos, 2855 Velasco La., Costa Mesa, Calif. 92626

Filed Mar. 25, 1985, Ser. No. 715,928
Int. Cl.[4] F16K *17/164*
U.S. Cl. 604—119 19 Claims



1. A valve for the control of vacuum in the left ventricle drain line, said valve comprising:

a valve body connectible in the left ventricle drain line between a patient and a suction pump, said body having a flow passage therethrough having an inlet end and an outlet end, a vacuum control passage in said body extending from said passage through said body to the atmosphere;

a rotatable sleeve positioned on the exterior of said body valve to rotate on said valve body with respect to said vacuum control passage to variably cover said vacuum control passage to control the effective area of said vacuum control passage so as to control inflow through said vacuum control passage from the atmosphere into said flow passage through said body whereby vacuum can be controlled within said flow passage;

walls defining a relief passage in said body extending from said flow passage to the exterior of said body; and

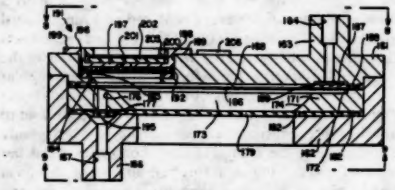
a tubular elastomeric member on said body covering said relief passage so that when pressure in said flow passage is below external pressure said relief passage is closed and when pressure in said flow passage is above external pressure, fluid in said flow passage discharges out of said relief passage out from under said tubular elastomeric member, said rotatable sleeve being in resilient contact with said elastomeric member to provide rotational friction for said rotatable sleeve so that it stays in place where set.

4,642,098

IV SYSTEM AND CONTROLLER AND COMBINATION IV FILTER AND PUMP ASSEMBLY FOR USE THEREIN AND METHOD

Ingemar Lundquist, Oakland, Calif., assignor to Valleylab, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 278,635, Jun. 29, 1981. This application Apr. 22, 1985, Ser. No. 725,657
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—123 17 Claims



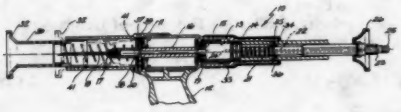
1. In an IV filter and pump assembly, first and second parts, means for securing said first and second parts into a unitary assembly, said first and second parts forming a chamber, one of said parts having an opening therein in communication with said chamber, one of said parts having an inlet port therein, the other of said parts having an outlet port therein, said inlet and outlet ports being in communication with said chamber, inlet valve means controlling the flow of liquid through the inlet port, outlet valve means for controlling the flow of liquid through the outlet port, a hydrophilic member disposed in said chamber and dividing said chamber into first and second regions and in which the inlet port is in communication with said first region and the outlet port is in communication with said second region, hydrophobic filter means carried by said unitary assembly and in communication with said first region, said hydrophobic filter means being disposed in the upper portion of said chamber for venting to ambient small quantities of air in said chamber and means for supplying a pumping action for liquid in said chamber so that it causes liquid to be moved out of the chamber through the outlet valve means and to be moved from the inlet valve means into the chamber.

4,642,099

INJECTOR

Ian R. Phillips, Killara; Robert H. Lodge, and Glen W. Bunyan, both of Dee Why, all of Australia, assignors to N.J. Phillips Pty. Limited, New South Wales, Australia

Filed Jul. 30, 1985, Ser. No. 760,394
Claims priority, application Australia, Jul. 31, 1984, PG6304
Int. Cl.[4] A61M *5/20*
U.S. Cl. 604—136 9 Claims



1. An injector to deliver a required dose into an animal, said injector comprising a hollow body, a movable assembly including an interacting piston and cylinder cooperating to define a variable volume working space, said assembly being longitudinally movable of said body between a cocked postion and a rest position, said piston and said cylinder being movable relative to each other between a cocked position defining a maximum volume for said space and a rest position defining a minimum volume for said space, a dose delivery means including a needle fixed to the said assembly and communicating with said space so that upon a reduction in volume thereof a dose is delivered through said delivery means, first spring means biasing said assembly to its rest position, second spring means to cause relative movement between said piston and cylinder to the rest position thereof, first retaining means to selectively retain said assembly in its cocked position and operable to release said assembly to cause insertion of said needle, second retaining means mounted on said assembly to selective retain said piston and cylinder, in the cocked position thereof and operable to release said piston and cylinder, first release means actuable to operate said first retaining means to release said assembly, second release means mounted on and fixed to said body to operate said second retaining means to release said piston and cylinder, and wherein said second release means is positioned to engage said second retaining means only after said needle has been injected into said animal at a predetermined distance.

4,642,100

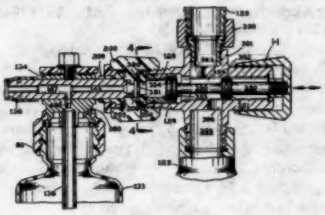
SHOWER-MOUNTED DOUCHE APPARATUS

Charles B. Kabbaby, 4290 S.W. 109th Ave., Davie, Fla. 33328

Continuation-in-part of Ser. No. 707,733, Mar. 4, 1985. This application Sep. 5, 1985, Ser. No. 772,766

Int. Cl.[4] A61M *37/00*

U.S. Cl. 604—150 2 Claims



1. For use with a shower apparatus having:

a water supply pipe with an outlet end, and

a shower head detachably connected to said outlet end of the water supply pipe,

an improved douche apparatus, comprising:

a valve having a valve body with an upper end and a lower end, means on the upper end of said valve body for attaching it to said outlet end of the water supply pipe, means on the lower end of said valve body for attaching it to the shower head, a valve member in said valve body selectively adjustable between a first position in which it establishes a first water flow path from said water supply pipe to said shower head and a second position in which it blocks said first water flow path, said valve body on one side thereof having a laterally extending neck which provides a branch passage extending from said valve member to receive water from said water supply pipe in said second position of the valve member;

a container assembly for holding a liquid douche medicament;

a fitting connecting said container assembly to said laterally extending neck of said valve body for passing water from said branch passage of said valve body;

said fitting further comprising an internal water passage and a flow restricting orifice;

means in said container assembly for mixing said liquid medicament with the water from said fitting; and

an applicator operatively connected to said container assembly for discharging the mixture of water and said liquid medicament;

said container assembly comprising:

a mixing head coupled to said fitting;

a container vessel having an air vent below said mixing head;

said laterally extending neck on the valve body, said fitting and said mixing head being dimensioned to position said container vessel completely to one side of the shower head; and

a siphon tube extending down into said container vessel having a constricted neck near the entrance to said mixing head functioning to provide venturi action to pull said medicament from said container assembly into said mixing head, thereby thoroughly mixing said medicament with the water prior to discharge of the mixture from the applicator.

4,642,101

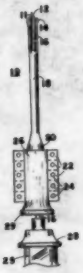
NON-TRAUMATIC BULBOUS CATHETER

F. John Krolikowski, 10 Sheehan Cir., Wellesley Hills, Mass. 02181, and Albert Shahnarian, 144 Worcester Rd., Princeton, Mass. 01541

Filed May 16, 1985, Ser. No. 734,509

Int. Cl.[4] A61M *5/00, 25/02*

U.S. Cl. 604—164 4 Claims



1. An improved intravenous catheter which is resistant to breaking, lacerating and infiltration and which causes secure convenient suturing attachment, wherein the intravenous catheter comprises:

an elongated cylindrical cannula having a smooth external annular surface and a hollow interior to admit a needle and fluids therethrough, which cannula, at a distal end, comprises a bulbous smooth-surfaced tip flaring externally from the smooth annular surface into a uniformly enlarged external diameter and curving smoothly to form an annular rim which curves smoothly into the hollow interior and a central opening equal in diameter to the hollow cannula interior, and which cannula, at a proximal end, comprises a broad base of greater diameter than the cannula, and extending beyond the broad base and rigidly secured to the broad base and cannula a hollow cylindrical hub wherein said hub comprises a series of break away tabs on each of two opposing sides of the hub, wherein each tab is provided with a central opening through the tab, which opening admits sutures for securing the intravenous catheter to the skin of the patent;

an elongated cylindrical needle sufficiently narrow in external diameter to fit within the cannula and, at a distal end, the needle comprises a sharp angled point for piercing skin and blood vessels of the patient;

which needle is inserted through the cannula tip for piercing through into the blood vessel, wherein the needle is removed after insertion into the blood vessel to permit fluid to flow through the cannula between an external vessel and the interior of the blood vessel.

4,642,102

INJECTOR

Hirofumi Ohmori, Yokohama, Japan, assignor to Mitsubishi Pencil Co., Ltd., Japan

Filed Jul. 19, 1985, Ser. No. 756,852

Claims priority, application Japan, Jul. 26, 1984, 59-114118

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—210 2 Claims

1. An injector comprising:

a barrel;

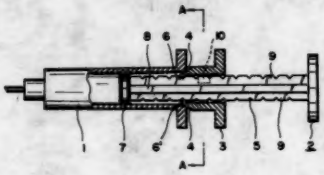
a plunger advanceable in said barrel and having a shaft portion and a sealing portion; and

stopper means mounted on an outer peripheral portion of said shaft portion of said plunger so as to be movable in a longitudinal direction of said plunger, for abutting against

a rear end surface of said barrel upon said plunger being advanced a predetermined distance in said barrel;

a front end portion of said stopper means being provided with inwardly extending projections formed thereon, and an outer peripheral surface of said plunger shaft portion being provided with recesses formed therein at intervals of a certain distance therealong in the longitudinal direction thereof, said projections and recesses being engageable with each other;

respective engaging portions being formed in said rear end surface of said barrel and on said front end of said stopper means for abutting engagement therebetween, at least one of said respective engaging portions of said barrel and stopper means being shaped into an oblique surface with respect to the longitudinal direction of said plunger; and



at least one slit being provided in said front end portion of said stopper means, said at least one slit extending longitudinally towards a flange of said stopper means;

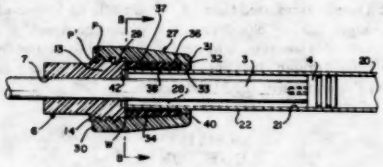
whereby, in a condition of abutting engagement between said respective engaging portions of said barrel and said stopper means under application of an advancing force upon said plunger acting in the advancing longitudinal direction thereof relative said barrel, said advancing force is received by said at least one oblique surface and translated thereby into an engaging force directed perpendicularly to said longitudinal direction of said plunger by which engaging force said projections on the stopper means are brought into a more firm engagement with said recesses in said plunger shaft portion such that said engaging force therebetween increases as said advancing force upon said plunger increases.

4,642,103

INJECTOR ASSEMBLY

William A. Gettig, Linnwood, Box 417, Millheim, Pa. 16854

Filed Jan. 7, 1986, Ser. No. 816,830
Int. Cl.[4] A61M *5/245*
U.S. Cl. 604—234 12 Claims



1. An injector assembly including, first and second subassemblies adapted to be removably affixed to each other, said first sub-assembly provided with first and second connector elements having mating fastener means, a plunger rod slidably sourrounded by said connector elements, said second subassembly including a barrel having a rear end and an opposite nose supporting a cannula, said barrel rear end initially slidably insertable within said second connector element, a resilient sleeve disposed intermediate said barrel and second connector element, and means on said connector elements longitudinally fore-shortening said sleeve as said connector element fastener means are engaged whereby, as said connector elements are axially displaced toward one another, said sleeve is inwardly directed to tightly interlock said two sub-assemblies.

4,642,104

URETHRAL CATHETER CAPABLE OF PREVENTING URINARY TRACT INFECTION AND PROCESS FOR PRODUCING THE SAME

Izumi Sakamoto, and Kunihiko Takagi, both of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Division of Ser. No. 382,743, May 27, 1982, Pat. No. 4,539,234.
This application Jun. 14, 1985, Ser. No. 734,726
Claims priority, application Japan, May 27, 1981, 56-182729; Nov. 13, 1981, 56-81474
Int. Cl.[4] A61M *5/325, 25/005*
U.S. Cl. 604—264 5 Claims

1. A urethral catheter capable of preventing urinary tract infection, comprising: a urethral catheter comprised of a material selected from the group consisting of an olefin polymer, a diene polymer or a silicone polymer as the base material; and an antimicrobial substance being ionically bonded with carboxyl groups in a film provided on the inside and/or outside walls of said urethral catheter, wherein:

(a) said film is a hydrolysis product of the reaction product obtained by reacting (A) a copolymer of maleic acid anhydride and a copolymerizable compound with (B) a polyfunctional compound having hydroxyl groups under a condition of an excess amount of said polymer (A), and

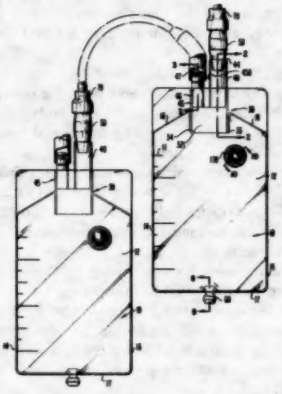
(b) The copolyer of maleic acid anhydride and a copolymerizable compound is a mixture of (I) about 0.5 to about 99.5 parts by weight of a copolymer of maleic acid anhydride and a copolymerizable vinyl monomer or olefin monomer and (II) about 0.5 to about 99.5 parts by weight of a copolymer of maleic acid anhydride and a copolymerizable aliphatic vinyl ester or aliphatic vinyl ether.

4,642,105

GASTRIC DRAINAGE SYSTEM

Kimberly A. M. Toter, 830 Tanner Dr., Wayne, Pa. 19087

Continuation-in-part of Ser. No. 581,665, Feb. 21, 1984, abandoned. This application Jul. 22, 1985, Ser. No. 757,607
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—323 9 Claims



1. A medical drainage valve system for the collection of gastric fluids comprising:

first anti-reflux means having wall means for receiving incoming matter including fluid and gaseous matter, for permitting said matter to pass therethrough whereafter said matter becomes outgoing matter, and flexible wall

means for automatic collapsing and closing said first anti-reflux means in response to gas or fluid pressure resulting from said outgoing matter to prevent said matter from passing in or out of said first anti-reflux means; and

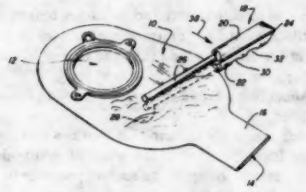
second anti-reflux means including a passageway in fluid communication with said first anti-reflux means, said second anti-reflux means having an inlet between the confines defined by said wall means of said first anti-reflux means and including within the first anti-reflux means for direct fluid communication with the atmosphere self-actuating valve means in fluid communication with said passageway for sensing fluid or gaseous pressure and in response thereto permitting said outgoing matter to pass there-through.

4,642,106

IMPLEMENT FOR EVACUATING THE CONTENTS OF DRAINABLE OSTOMY POUCHES

William Downey, P.O. Box 135, Clinton, N.Y. 13323

Filed Feb. 2, 1984, Ser. No. 576,442
Int. Cl.[4] A61F *5/44*
U.S. Cl. 604—332 **4 Claims**



1. A combination providing an ostomy pouch wearer with an improved emptying system, said combination comprising:

(a) an essentially flat ostomy pouch having superposed, flexible walls of predetermined width and a drain opening at one end; and

(b) a one-piece, molded plastic implement for manual manipulation in cooperative relationship with said pouch; said implement including:

(i) a pair of manually engageable, elongated handle pieces extending along substantially linear axes;

(ii) a pair of elongated engagement members respectively extending integrally from one end of said handle pieces along said linear axes; and

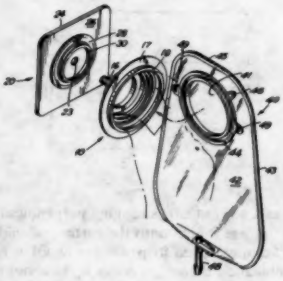
(iii) integral hinge means connecting said handle pieces at the end of each opposite said one end to permit movement of said handle pieces, and thereby said engagement members, about a pivot axis substantially perpendicular to said linear axes, moving substantially in a single plane transverse to said pivot axis, between a first position, wherein said engagement members are spaced from one another to permit positioning thereof on opposite sides of said pouch walls, and a second position, wherein said engagement members are in closely spaced relation with portions of said pouch walls engaged therebetween, whereby said implement may be moved toward said drain opening with said engagement members in sliding contact with said pouch walls to force the contents of said pouch out through said drain opening.

4,642,107

ADAPTER FOR USE WITH TWO PIECE OSTOMY SYSTEM

Ronald Arnone, Naperville, Ill., and Keith Ferguson, Scotch Plains, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 14, 1983, Ser. No. 541,859
Int. Cl.[4] A61F *5/44*
U.S. Cl. 604—342 **2 Claims**



1. An adapter that connects a two piece ostomy system which consists of a body side portion having an adhesive dressing to which a rib shaped coupling member is directly, permanently affixed and a collection pouch portion having a stomal aperture in one pouch side wall surrounded by a channel shaped coupling member permanently secured to said pouch side wall, said adapter having a longitudinal axis and proximal and distal ends extending longitudinally and consisting of a continuous, relatively thin, flexible polymeric annular wall having one or more accordion folds, a flange means extending perpendicularly to said longitudinal axis at the distal end of said polymeric adapter wall to provide support for a rib shaped coupling member, said flange including an upwardly projecting rib shaped adapter coupling member having an inwardly extending thin resilient deflect seal strip shaped to fit within the channel shaped coupling member of said pouch portion, and an adapter channel shaped coupling member secured to the other end of said polymeric wall, said adapter channel shaped coupling member sized to snap over the coupling rib affixed to said body side portion, and wherein the aperture encircled by said adapter channel shaped coupling member is smaller than the aperture encircled by said adapter rib shaped coupling member whereby when said accordion folds are in their relaxed state said adapter will have a low profile and in use will be near the surface of said body side piece.

4,642,108

TAMPON FOR FEMININE HYGIENE AND A PROCESS FOR ITS PRODUCTION

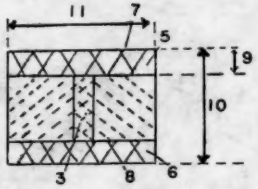
Scarlet Sustmann, Viersen, Fed. Rep. of Germany, assignor to Vereinigte Papierwerke, Schickedanz & Co., Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 536,175, Sep. 27, 1983, abandoned. This application Nov. 19, 1985, Ser. No. 799,279
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236540
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—379 **12 Claims**

1. In a process for the production of a tampon for female hygiene comprising the steps of

(1) wrapping a continuous strip of cottonwool or rayon staple or a combination thereof in a moisture-pervious, fluff-free or fuzz-free covering material, said covering material having overlapping edge portions forming an overlap line,

(2) cutting said continuous length of wrapped strip into the desired individual length, perpendicularly to the overlap line,
(3) attaching a recovery thread to said individual length of wrapped strip, and
(4) compressing said individual length of said wrapped strip cylindrically,
the improvement consisting essentially of, before compressing, the exposed cut edges running perpendicularly to said overlap line are folded onto the surface of said individual length of said wrapped strip of cottonwool or rayon staple or a combination thereof to cover up to about one sixth of the length of said individual length of said wrapped strip after folding, and folding said individual length of said wrapped strip of cottonwool or rayon staple or a combination thereof, whereby, after said compressing cylindrically, the inwardly folded cut edges are inside the tampon.

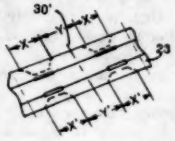


4,642,109

METHOD OF MAKING ELASTIC DIAPERS AND PRODUCT

John J. Bradley, Green Bay, and Debra K. Hansen, Maribel, both of Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Division of Ser. No. 565,227, Dec. 27, 1983, Pat. No. 4,543,141. This application May 17, 1985, Ser. No. 735,056
Int. Cl.⁴ A41B *13/02*
U.S. Cl. 604—385 Z **2 Claims**



1. A novel disposable diaper comprising an outermost moisture impervious web, a stretched elastic ribbon selectively adhered to said web, an interior absorbent batt layer and an innermost web of moisture pervious material both connected to said outermost web, said ribbon being secured only centrally of its length to said moisture impervious web and adjacent each ribbon end being V-folded on itself, thus preventing attachment to said web, said ribbon having adhesive applied thereto along the length thereof and on the side thereof facing said outermost web, said V-fold extending along the length of said ribbon and bringing together portions of said adhesive supplied side.

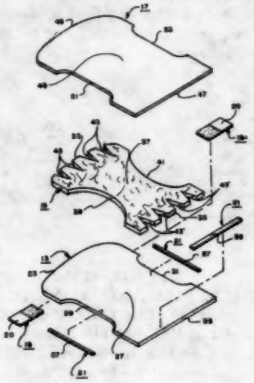
4,642,110

DISPOSABLE DIAPER

Evelin Dudek, 3318 Sagebrook, Las Vegas, Nev. 89121

Filed Jul. 3, 1985, Ser. No. 751,483
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—385.1 **2 Claims**

1. A disposable diaper for covering the posterior and anterior of the lower torso of a body for retention of waste therein, said diaper comprising:
(a) a bottom sheet being liquid impermeable and defining the exterior surface of said diaper;
(b) an absorbent pad for absorbing liquid; said absorbent pad having a first end, a second end, an intermediate portion, a first side and a second side; said first end of said absorbent pad including V-shaped notches cut into and evenly spaced along said first end of said absorbent pad, said notches having a width extending a short distance across the edge of said first end and having a length extending inwardly toward said intermediate portion of said absorbent pad for allowing said first end of said absorbent pad to conform to the posterior of said body;
(c) a top sheet being liquid permeable defining the interior of said diaper;
(d) fastening means for securing said bottom sheet, absorbent pad, and top sheet around the waist of said body; and
(e) restraint means for applying sealing pressure to the waist and legs of said body.



4,642,111

INJECTOR FILLED WITH AN ANTI-CANCER COMPOSITION

Izumi Sakamoto, and Kunihiko Takagi, both of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Continuation of Ser. No. 466,190, Feb. 14, 1983, Pat. No. 4,536,387. This application Mar. 13, 1985, Ser. No. 711,129
Claims priority, application Japan, Feb. 12, 1982, 57-21924; Nov. 8, 1982, 57-19747
Int. Cl.⁴ A61K *9/22*
U.S. Cl. 604—890 **54 Claims**

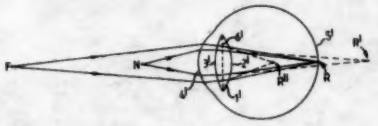
1. An injector filled with a composition comprising:
(a) a polymer, wherein said polymer has fixed thereto;
(b) an anti-cancer drug; and
(c) a blood coagulation factor, wherein said anti-cancer drug and said blood coagulation factor are fixed to said polymer so as to be capable of sustained release from the polymer at the site of injection and wherein said composition is useful for transcatheter arterial embolization and needle therapy.

4,642,112

ARTIFICIAL EYE LENSES

Michael H. Freeman, Denbigh, Wales, assignor to Pilkington P.E. Limited, United Kingdom

Filed Apr. 14, 1982, Ser. No. 368,362
Claims priority, application United Kingdom, Apr. 29, 1981, 8113149; Jun. 10, 1981, 8117709; Dec. 23, 1981, 8138854
Int. Cl.[4] A61F 2/16; G02C 7/04, 7/10
U.S. Cl. 623—6 24 Claims



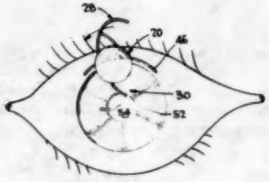
1. An artificial eye lens having basic refractive power providing one focus, and having diffractive power which deviates some light from the basic refractive power focus to another focus.

4,642,113

INTRAOCULAR LENSES

Seymour Dubroff, 4000 Massachusetts Ave., Apt. 1422, Washington, D.C. 20016

Continuation of Ser. No. 496,529, May 23, 1983, abandoned, which is a continuation of Ser. No. 230,279, Jan. 30, 1981, abandoned. This application Jul. 8, 1985, Ser. No. 752,012
The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 3 Claims



3. An intraocular lens for implant in an eye comprising: a lens body having a peripheral edge; and

a plurality of positioning members disposed on said lens body, each of said positioning members including a flexible, resilient, fixation filament extending from said peripheral edge of said lens body and having a continuous curving configuration throughout the length thereof with a proximal segment adjacent said lens body having a maximum radius of curvature and a distal segment terminating at a free, unattached end having a minimum radius of curvature, said proximal segment extending from said peripheral edge of said lens body at an angle to the tangent thereat less than 90 degrees such that said fixation filament in combination with said lens body produces a smooth curved surface and each of said positioning members further including a resilient proximal filament having a first end joined with said fixation filament at a position spaced from said peripheral edge of said lens body and spaced from the center of said lens body by a distance in the range of from 5 mm to 5.5 mm and a second end secured at said peripheral edge of said lens body.

4,642,114

POSTERIOR CHAMBER INTRAOCULAR LENS

Daniele S. A. Rosa, 28 Avenue Raphael, 75016 Paris, France

Continuation-in-part of Ser. No. 540,796, Oct. 11, 1983, abandoned. This application Apr. 23, 1985, Ser. No. 726,268
Claims priority, application France, May 16, 1983, 83 08037
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 1 Claim

1. A posterior chamber lens implant for a human eye for use after extracapsular surgery in which a posterior capsule is left substantially intact, said lens comprises a substantially circular rigid optic having a front surface, a rear surface and a substantially circular and continuous outer rear edge, said front surface being a continuous convex surface and said rear surface being a continuous convex surface extending between said outer rear edge, said rear convex surface being provided only at its periphery with discontinuous spacing means to space the posterior capsule from the convex rear face and wherein the curvature radius of said rear face is about 3.5 times the curvature radius of the front face and wherein the external diameter of the lens is between 6.3 and 7 millimeters and wherein said implant has at least two retaining loops fitted thereto to engage the ciliary sulcus of the lens bag, said retaining loops being forwardly inclined at an angle of about 10° from the mid plane of the lens and wherein the spacing means comprise four prongs of frustoconical shape fitted in four holes arranged in a square pattern extending through the optic between said front and rear convex surfaces, said prongs being pierced to form conduits giving permeability between said convex surfaces and the anterior and posterior chambers when said lens implant is implanted within an eye.

4,642,115

ARTIFICIAL EYE LENS

Nikolai M. Sergienko, Kiev, U.S.S.R., assignor to Kievsky Nauchno-Issledovatelsky Institut Klinicheskoi I Experimentalnoi Khirurgii, Kiev, U.S.S.R.

PCT No. PCT/SU84/00047, § 371 Date Apr. 4, 1986, § 102(e) Date Apr. 4, 1986, PCT Pub. No. WO86/01096, PCT Pub. Date Feb. 27, 1986
PCT Filed Aug. 6, 1984, Ser. No. 848,722
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 2 Claims

1. An artificial eye lens, comprising a lens proper and three supporting elements, one of which is shaped as a loop (3), while the two other elements are arranged on the same side of the lens (2) diametrically opposite to the loop-shaped element, characterized in that each of the elements located on the same side of the lens (2) is made as V-shaped legs (4) made fast on the anterior surface of the lens (2), with the end of their one side (5), and in that said sides (5) of the V-shaped legs diverge along

the lateral surface of the lens (2) and are inclined towards the posterior lens surface so that the other sides (7) of said legs are

situated in the lens principal plane and face each other with the vacant ends of the legs.

4,642,116

BUOYANT POSTERIOR CHAMBER INTRAOCULAR LENS IMPLANT

Henry Clayman, Suite 709, 12555 Biscayne Blvd., Miami, Fla. 33181, and James R. Longacre, 3621 Littledale Rd., Kensington, Md. 20895

Filed Mar. 19, 1985, Ser. No. 713,539
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **12 Claims**

11. A posterior chamber intraocular lens implant comprising:

a central optic of material denser than the aqueous humor of the eye and having a gas bubble incorporated therein in an annular ridge extending posteriorly from the rear surface of said central optic to space the rear surface from the posterior capsule and

at least first and second haptic loops extending outwardly from said central optic for positioning said optic in the posterior chamber.

4,642,117

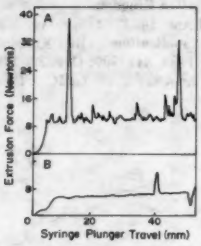
MECHANICALLY SHEARED COLLAGEN IMPLANT MATERIAL AND METHOD

Hoc M. Nguyen, and George H. Chu, both of Sunnyvale, Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Filed Mar. 22, 1985, Ser. No. 715,098
Int. Cl.[4] A61F *2/10, 2/28;* A61K *37/12*
U.S. Cl. 623—11 **10 Claims**

1. An injectable collagen material composed of reconstituted, mechanically sheared atelopeptide collagen fibers and characterized, with respect to unsheared, but otherwise identical, collagen material measured under the same conditions, by:

about a 30%–70% decrease in the force required to inject the material, at a concentration of between about 35–65 mg/ml, through a 27–30 gauge needle, and



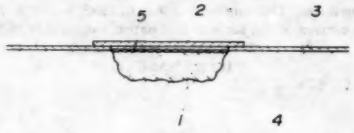
b. a substantial decrease in the number and magnitude of transient increases in force required for injecting the material, at such concentration, through such needle.

4,642,118

MAN-MADE SKIN COMPOSED OF TWO LAYERS: COLLAGEN AND A POLY-ALPHA-AMINO ACID

Yoshimitsu Kuroyanagi, Hachiogi; Teruo Miyata, and Manabu Seno, both of Tokyo, all of Japan, assignors to Koken Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 741,835
Claims priority, application Japan, Nov. 6, 1984, 59-118276
Int. Cl.[4] A61F *2/10*
U.S. Cl. 623—15 **9 Claims**



1. A man-made skin composed of two layers: collagen and a poly-α-amino acid, which is characterized by comprising sticking on a membrane of collagen sponge a membrane of a poly-α-amino acid which has a good affinity with tissue cells and an appropriate permeability for moisture.

4,642,119

CONNECTIVE TISSUE PROSTHESIS

Jitendera S. Shah, Bristol, England, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 15, 1985, Ser. No. 755,237
Claims priority, application United Kingdom, Jul. 16, 1984, 8418018
Int. Cl.[4] A61F *2/08*
U.S. Cl. 623—13 **16 Claims**

1. A bio-compatible connective tissue prosthesis, capable of non linear deformation comprising a first load bearing element, and a bundle of fine filaments which are arranged to allow ingrowth of connective tissue, said filaments having a collective elastic modulus which is greater than the effective elastic modulus of the first element, and being directly attached to the

first element at spaced points along their length, the length of filament between said spaced points being greater than the unstressed length of the first element between said spaced points, such that the filaments are substantially unstressed unless the load on the prosthesis exceeds a predetermined value.

4,642,120

REPAIR OF CARTILAGE AND BONES

Zvi Nevo, Herzlia, and Samuel Itay, Kfar Saba, both of Israel, assignors to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel-Aviv, Israel

Filed Mar. 21, 1984, Ser. No. 591,822

Claims priority, application Israel, Mar. 23, 1983, 68218

Int. Cl.[4] A61F *2/28, 2/02*

U.S. Cl. 623—16 **8 Claims**

1. A composition of the repair of defects of articular cartilage and bones by implantation, comprising:

cells selected from the group consisting of embryonal chondrocytes, and mesenchyme cells of the species to which the composition is to be implanted capable of being converted by chondrogenic inducing factors to cartilage cells, and

a biological glue consisting of fibrinogen, thrombin and a protease inhibitor.

4,642,121

JOINT ENDOPROSTHESIS AND INSTRUMENT FOR KNOCKING IT IN OR OUT

Arnold Keller, Kayhude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co, Hamburg, Fed. Rep. of Germany

Filed Aug. 20, 1985, Ser. No. 767,556

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433859

Int. Cl.[4] A61B *17/00, 17/18*

U.S. Cl. 623—18 **6 Claims**

1. In combination, a joint endoprosthesis and instrument for knocking it in or out, the instrument comprising a shaft (10) and a fork (11) having a bore (19) therein, means for securing one end of the shaft in said bore, the longitudinal axis of the shaft being transverse to the plane of the fork, the prosthesis having a neck (3), a groove and a first rib means on

one of the neck and fork and second rib means on the other of the neck and fork for collaboration with the groove and first rib means, the one end of the shaft further comprising a locking pin (20) protruding beyond said bore when said shaft is secured in said bore and the prosthesis having a locking recess (9) for receiving the locking pin.

4,642,122

TOE IMPLANT

Arthur D. Steffee, Gates Mills, Ohio, assignor to Laure Prosthetics, Inc., Portage, Mich.

Filed Apr. 2, 1986, Ser. No. 847,362

Int. Cl.[4] A61F *2/42*

U.S. Cl. 623—21 **3 Claims**

1. In a prosthetic toe joint adapted for replacing a human toe joint, including a one-piece tack member for implanting into the distal end of a metatarsal, and a one-piece socket member for implanting into the proximal end of a phalanx, the improvement comprising:

said tack member having an enlarged head part provided with a smooth, part-spherical, convex bearing surface thereon, and a stem part fixed to said head part and projecting in a direction away from said convex bearing surface,

said convex bearing surface being generated about a radius having a center point located on a longitudinal axis which functions as the central longitudinal axis of the head part, said convex bearing surface extending upwardly above said axis and symmetrically sidewardly on opposite sides of said axis through first angles less than 90°, and said convex bearing surface projecting downwardly from said axis through a second angle greater than 90°,

said head part having a substantially planar rear surface which extends transversely with respect to said axis and intersects said axis at a location disposed forwardly of said center point, said rear surface extending vertically from the uppermost edge of said head part to a location disposed downwardly below said axis,

said head part having a lower portion which is disposed downwardly a substantial distance below said axis and which extends rearwardly from said rear surface to a point located rearwardly of a plane which perpendicularly intersects said axis at said center point, said lower portion defining thereon a lower and rearward extension of said convex bearing surface,

said stem part comprising a pinlike member which is integrally fixed to said head part and projects rearwardly from said rear surface, said pinlike member projecting axially rearwardly a substantial distance beyond said lower portion of said head part, said pinlike member having a central longitudinally extending axis which is generally parallel to but spaced downwardly below the longitudinal axis of said head part;

said socket member being constructed of a plastics material and having a head part at one end thereof, said head part on the free end thereof defining a smooth, part-spherical, concave bearing surface, and a stem part fixed to said head part and projecting axially outwardly away from the other end thereof,

said head part having an outer annular surface which is generally elliptical in cross section, said elliptical cross section being elongated horizontally so that the minor or small dimension of the ellipse extends generally vertically, said concave bearing surface being defined by an edge surface where the concave bearing surface intersects said peripheral surface, said edge surface being of a generally horizontally elongated elliptical profile,

said head part having a longitudinal centerline which passes through the center of the elliptical cross section

and is substantially aligned with the longitudinal axis of the head part of said tack member,

said concave bearing surface being generated about a second radius having a center located on said longitudinal centerline, said second radius being substantially equal to said first radius, said concave bearing surface extending symmetrically horizontally sidewardly in opposite directions through third angles which are less than 90° and which are slightly less than said first angles, and said concave bearing surface extending vertically in opposite directions from said longitudinal centerline through fourth angles which are significantly less than said first angles,

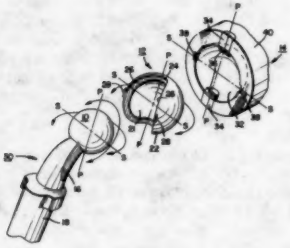
said stem part including a pinlike element which projects outwardly from the other end of said head part and is provided with a plurality of annular flexible ribs disposed thereon in axially spaced relation, said pinlike element and said ribs being of a generally horizontally elongated elliptical configuration.

4,642,123

BALL AND SOCKET BEARING FOR ARTIFICIAL JOINT

Douglas G. Noiles, New Canaan, Conn., assignor to Joint Medical Products Corporation, Stamford, Conn.

Filed Mar. 8, 1983, Ser. No. 473,431
Int. Cl.⁴ A61F *2/34*
U.S. Cl. 623—22 **5 Claims**



1. A ball and socket joint for implanting in the body comprising:

a ball;

first means for affixing the ball to bone including a stem portion for implantation in bone and a neck portion connecting the stem portion to the ball;

a bearing member having an opening defined by a rim, said bearing member surrounding a portion of the ball, the ball being free to move within the bearing member in a plurality of directions;

a cup to be affixed to bone, said cup including a cavity which surrounds a portion of the bearing member, said cavity having an opening which defines a plane through which the bearing member enters the cavity; and

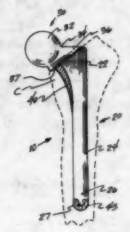
second means associated with the cup for retaining the bearing member within the cavity, the bearing member being free to rotate within the cavity in response to contact between the neck portion of the first means and the rim of bearing member's opening, the second means constraining said rotation about an axis which is substantially parallel to the plane defined by the opening of the cavity.

4,642,124

HIP PROSTHESIS

Francis W. Cooke, Clemson, S.C., assignor to Clemson University, Clemson, S.C.

Filed Jun. 11, 1984, Ser. No. 619,496
Int. Cl.⁴ A61F *2/32*
U.S. Cl. 623—23 **7 Claims**



1. An improved hip prosthesis for implantation for improved axial compressive loading of the calcar while avoiding wedging and axial load transfer from the distal tip of the prosthesis stem to the femur comprising:

(a) a medullary stem which includes a buttress section, a middle section and a distal tip section, all being of unitary construction, having smooth outer surfaces and being devoid of any irregularities therealong; and

(b) a head secured to said stem, said head including a ball for articulation within an acetabulum, a neck section distal to said ball and a collar section located between said neck section and said buttress section of same stem and defining a shoulder on an under side of same, said head being angularly offset from said stem according to anatomical criteria for proper contact between said shoulder of said collar section and an osteotomized calcar bone surface, said buttress section having a relieved inferior surface from a point adjacent to said collar downwards to said middle section with compressible material located therein extending along said inferior surface and being adequate in thickness to ensure persistent contact between the collar and the calcar bone and reduce wedging of the prosthesis within the femur, and said stem having a uniform cross section from said middle section distally to a tip of said distal tip section, whereby when implanted with a luting agent around at least a portion of said stem, said collar will maintain contact with the calcar bone for transmittal of axial compressive stresses thereto while said smooth stem surface precludes transmission of any significant shear forces on said luting agent adjacent thereto.

4,642,125

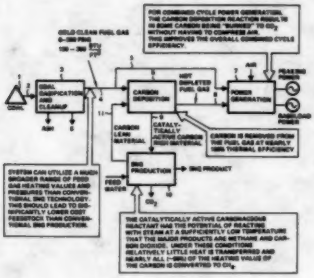
CARBONACEOUS MATERIAL AND METHODS FOR MAKING HYDROGEN AND LIGHT HYDROCARBONS FROM SUCH MATERIALS

Maksymilian Bark, and Jack L. Blumenthal, both of Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 248,597, Mar. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 99,789, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 917,240, Jun. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 817,647, Jul. 21, 1977, abandoned. This application Nov. 30, 1983, Ser. No. 557,405

Int. Cl.[4] C10J *3/00*

U.S. Cl. 48—197 R **30 Claims**


FOR COMBINED CYCLE POWER GENERATION, THE CARBON DEPOSITION REACTION RESULTS IN SOME CARBON BEING "BURNED" TO CO_2 WITHOUT HAVING TO COMPRESS AIR. THIS IMPROVES THE OVERALL COMBINED CYCLE EFFICIENCY.
COAL PREPARATION AND CLEANUP
CARBON DEPOSITION
HOT ENRICHED FUEL GAS
AIR
POWER GENERATION
CARBON LEAN MATERIAL
CATALYTICALLY ACTIVE CARBON RICH MATERIAL
CARBON IS REMOVED FROM THE FUEL GAS AT NEARLY 100% THERMAL EFFICIENCY
SNG PRODUCTION
FEED WATER
SNG PRODUCT
SYSTEM CAN UTILIZE A MUCH BROADER RANGE OF FEED GAS HEATING VALUES AND PRESSURES THAN CONVENTIONAL SNG TECHNOLOGY. THIS SHOULD LEAD TO SIGNIFICANTLY LOWER COST FEEDSTOCK THAN CONVENTIONAL SNG PRODUCTION.
THE CATALYTICALLY ACTIVE CARBONACEOUS REACTANT HAS THE POTENTIAL OF REACTING WITH STEAM AT A SUFFICIENTLY LOW TEMPERATURE THAT THE MAJOR PRODUCTS ARE METHANE AND CARBON DIOXIDE. UNDER THESE CONDITIONS RELATIVELY LITTLE HEAT IS TRANSFERRED AND NEARLY ALL (~98%) OF THE HEATING VALUE OF THE CARBON IS CONVERTED TO CO_2.

1. A continuous steam gasification process for producing a high heating value gas stream containing methane and hydrogen from a low heating value fuel gas containing carbon monoxide and hydrogen comprising the steps of:

(a) reacting in a steam gasification zone a fibrous carbon-enriched carbonaceous material with steam at a temperature of from about 500° C. to about 750° C. and a pressure of from about 1 to about 100 atmospheres to gasify at least about 40% of the carbon in the fibrous carbon-enriched carbonaceous material to produce (i) a high heating value gas stream containing methane and hydrogen and (ii) a fibrous carbon-lean carbonaceous material, the fibrous carbon-enriched carbonaceous material comprising from about 55% to about 98% by weight carbon, from about 1% to about 44% by weight ferrous group metal component, and from about 0.1% to about 1% by weight hydrogen, the ferrous group metal component containing at least 70% by weight nickel, cobalt, and combinations thereof and not more than 30% by weight iron, the fibrous carbon-enriched carbonaceous material including a major phase and a minor phase, the major phase comprising from about 95% to about 99.9% by weight carbon, from about 0.1% to about 1% by weight hydrogen, and the balance, if any, being the ferrous group metal component, the minor component being nodules which are dispersed throughout the major phase and are intimately associated with and at least partly bonded to the carbon in the major phase, the minor phase comprising carbon and at least 50% by weight ferrous group metal component;

(b) withdrawing from the steam gasification zone (i) the high heating value gas stream and (ii) a solid phase consisting essentially of the fibrous carbon-lean carbonaceous material;

(c) reacting in a carbon deposition zone the withdrawn fibrous carbon-lean carbonaceous material with the low heating value fuel gas at a temperature of from about 300° to about 700° C. to deposit carbon on the fibrous carbon-lean carbonaceous material to form (i) the fibrous carbon-enriched carbonaceous material and (ii) depleted low heating value fuel gas;

(d) withdrawing from the carbon deposition zone a solid phase consisting essentially of the fibrous carbon-enriched carbonaceous material;

(e) recycling carbon-enriched carbonaceous material withdrawn from the carbon deposition zone to the steam gasification zone; and

(f) lowering the temperature of the withdrawn high heating value gas stream and contacting it with the fibrous carbon-enriched carbonaceous material at a temperature of 300° to 500° C. for increasing the heating value of the high heating value gas stream.

4,642,126

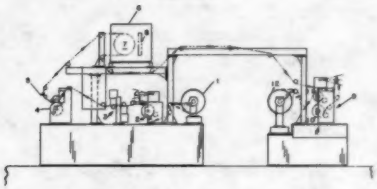
COATED ABRASIVES WITH RAPIDLY CURABLE ADHESIVES AND CONTROLLABLE CURVATURE

Eugene Zador, Ballston Lake; Wesley R. Kaczmarek, Burnt Hills, and Sitaramaiah Ravipati, Latham, all of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Feb. 11, 1985, Ser. No. 700,372

Int. Cl.[4] B24D *11/02*

U.S. Cl. 51—295 **20 Claims**



1. A coated abrasive having at least one layer of adhesive comprising the cured product of liquids containing chemical unsaturation and capable of rapid, spontaneous polymerization initiated by actinic radiation, said cured adhesive being sufficiently deformable at a first temperature of not more than 130° C. to be shaped, along with the backing on which it is coated, into a predetermined curvature by the application of tensile forces less than those required to break the coated abrasive, said cured adhesive further being sufficiently rigid at a second temperature not less than 25° C. so as to cause said coated abrasive to retain at said second temperature, in the absence of mechanical forces other than those induced by natural gravity, the curvature imparted to said coated abrasive at said first temperature and maintained during cooling from said first temperature to said second temperature.

4,642,127

METHOD FOR COOLING BLAST FURNACE GAS IN AN HEAT RECOVERY SYSTEM

Takehiro Ando, Ibaraki; Hideo Kimura, Nara; Noriyuki Oda, Sennan; Takeji Asai, Hyogo; Ken Mochizuki, Kita-kyushu; Toshihisa Fujihara, Kita-kyushu, and Katsuji Maeda, Kita-kyushu, all of Japan, assignors to Sumitomo Metal Industries, Ltd. and Hitachi Shipbuilding & Engineering Company Limited, both of Osaka, Japan

Continuation of Ser. No. 488,161, Apr. 25, 1983, which is a continuation-in-part of Ser. No. 288,308, Jul. 30, 1981, abandoned. This application May 20, 1985, Ser. No. 736,402

Claims priority, application Japan, Aug. 28, 1980, 55-119131

Int. Cl.[4] B01D *50/00, 51/00*

U.S. Cl. 55—20 **2 Claims**

1. A method of cooling blast furnace gas in a blast furnace gas treating system in which

gas discharged from a blast furnace is conducted to a dry-type coarse particle removing unit arranged downstream from the furnace and comprising an inlet tube having a downwardly directed lower end, a dust collecting box surrounding the inlet tube and having an outlet above the lower end of the inlet tube, said removing unit being

adapted to normally remove in a dry manner coarse particles from the gas discharged from the furnace by introducing the gas downwardly through the inlet tube and causing the gas to flow upward in the dust collecting box to be discharged through the outlet;

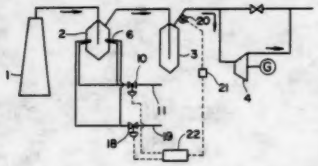
a dry-type particle removing unit is connected to and arranged downstream from the coarse particle removing unit for removing the remaining particles from the gas discharged by the coarse particle removing unit; and

a turbine is connected to and disposed downstream from the fine particle removing unit for recovering energy from the gas discharged by the fine particle removing unit;

said method comprising

detecting the temperature of the blast furnace gas at the outlet of the fine particle removing unit, and when the detected temperature exceeds a specified value indicating that the blast furnace gas is approaching a high temperature unsuitable for the fine particle removing unit,

rapidly cooling the blast furnace gas utilizing the dry-type



coarse particle removing unit to perform the additional function of cooling the blast furnace gas to a temperature at least as low as said specified value by supplying a cooling liquid into the dust collecting box in a manner such as to avoid wetting by the cooling liquid of the interior of the dust collecting box and the outer periphery of the inlet tube,

said supplying step being carried out by positioning a plurality of two-fluid or hollow cone nozzles with their outlets arranged in circumferentially spaced relation with the periphery of the inlet tube and at substantially the same level as the lower end of the inlet tube and,

directing the nozzle outlets in corresponding horizontal or obliquely upward directions substantially tangentially of the outer periphery of the inlet tube,

thereby completely entraining the cooling liquid in the blast furnace gas flowing upwardly in the dust collecting box from the inlet tube and completely evaporating the cooling liquid prior to the discharge of the blast furnace gas through the outlet of the dust collecting box.

4,642,128

SMOKE EVACUATOR SYSTEM WITH ELECTRONIC CONTROL CIRCUITRY

Armando N. Solorzano, Colorado Springs, Colo., assignor to Xanar, Inc., Colorado Springs, Colo.

Filed Sep. 11, 1985, Ser. No. 774,693

Int. Cl.⁴ B01D *35/14, 46/42*

U.S. Cl. 55—217 **3 Claims**

1. A smoke evacuator system comprising:

a motor operative in response to alternating current supplied thereto;

a vacuum pump run by said motor;

a duct in fluid communication with said vacuum pump such that air and smoke are drawn through said duct by said pump;

a filter mounted in said duct;

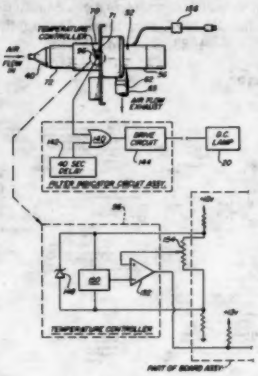
a direct current power supply operative in response to said alternating current supplied to said motor;

a filter clogged indicating circuit powered by said direct current power supply for generating a signal indicative of the clogged condition of said filter and including:

a temperature controller circuit disposed in the air flow between said filter and said vacuum pump for generating a signal indicative of the temperature of said air flow and transmitting said temperature signal to said filter clog circuit;

means for setting a temperature reference signal in said filter clog circuit and including a potentiometer;

means for generating a trigger signal when said temperature indicating signal exceeds said reference signal;



time delay circuit means in said filter clog circuit for generating a time delay signal for a prescribed time period after said circuit is initially energized;

gate means in said filter clog circuit for receiving said trigger signal and said time delay signal, said gate means operative to transmit said trigger signal only after said prescribed time delay has passed; and,

indicator means operative in response to said trigger signal transmitted by said gate means for indicating that said filter is clogged.

4,642,129

METHOD FOR MANUFACTURING PREFORMS OF GLASS FOR OPTICAL FIBERS

Nikolaos Douklias, Kirchheim, and Josef Grabmaier, Berg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 26, 1985, Ser. No. 759,233

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1984, 3434598

Int. Cl.⁴ C03B *37/025*

U.S. Cl. 65—3.12 **30 Claims**

1. A method for manufacturing preforms of glass for subsequently making optical fibers comprising the steps of generat-

ing glass particles from a vapor phase; collecting the glass particles produced from the step of generating the glass particles; and then subsequently applying the collected glass particles to the deposition surface of a substrate for the formation of a porous member to form a preform for the production of optical fibers by creating a stream of collected particles, by heating the stream of collected particles and by directing the heated stream onto the deposition surface.

4,642,130

APPARATUS FOR AND METHOD OF COATING GLASS

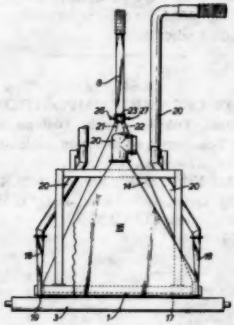
Edward Hargreaves, Prescot, and Andrew F. Simpson, Preston, both of England, assignors to Pilkington Brothers P.L.C., St. Helens, England

Filed Mar. 26, 1985, Ser. No. 716,093

Claims priority, application United Kingdom, Mar. 29, 1984, 8408118

Int. Cl.[4] C03C *17/00*

U.S. Cl. 65—60.1 10 Claims



1. Apparatus for coating glass by pyrolysis of a powder at the glass surface to form a coating on that surface, and in which a flow of a suspension of a powder in a carrier gas is applied to a moving hot glass surface across the width of that surface, said apparatus comprising:

an applicator for applying said suspension of powder in a carrier gas to said glass surface;

means for supporting and advancing hot glass along a path beneath said applicator;

the applicator comprising a chamber which, transversely of said path, diverges downwardly from a central inlet for the downward flow of said suspension of powder, the chamber being defined between inverted fan-shaped front and rear walls which are joined by sloping end walls, and the diverging, inverted fan-shaped chamber terminating in a slot extending across said supporting means close to the path of the glass to be coated.

8. A method of coating glass by pyrolysis of a powder at the glass surface to form a coating on that surface, comprising:

providing a downward flow of a suspension of said powder in a carrier gas,

creating a controlled fan-shaped divergence of said flow to a width corresponding to the width of a moving hot glass surface to be coated, the divergence being created transversely of the path of movement of the hot glass surface and downwardly from a central inlet for the downward flow of said suspension of powder, in a chamber defined between inverted fan-shaped front and rear walls which are joined by sloping end walls, and

applying said flow at that width to the glass surface, while maintaining uniformity of deposition of the coating on the moving glass surface from said diverging flow.

4,642,131

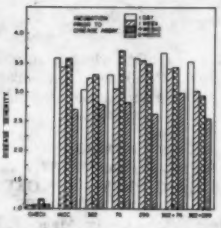
PRODUCTION OF DISEASE SUPPRESSIVE COMPOST AND MICROORGANISM CULTURE FOR USE THEREIN

Harry A. J. Hoitink, Wooster, Ohio, assignor to The Ohio State University, Columbus, Ohio

Continuation-in-part of Ser. No. 519,691, Aug. 2, 1983, abandoned. This application Jul. 22, 1985, Ser. No. 757,389

Int. Cl.[4] C05F *11/08*

U.S. Cl. 71—6 18 Claims



1. A biologically pure culture for inducing suppression of plant pathogens and/or diseases caused thereby in a compost, said culture consisting essentially of at least one Trichoderma fungus selected from the group consisting of *Trichoderma hamatum* isolate 382, A.T.C.C. No. 20765 and *T. hamatum* isolate 559, A.T.C.C. No. 20764, and at least one bacterium selected from the group consisting of *Pseudomonas maltophilia* sp. isolate 76, A.T.C.C. No. 53199 and Flavobacterium sp. isolate 299, A.T.C.C. No. 53198.

13. A method for producing a compost which is suppressive to a plant pathogen and/or disease caused thereby, which method comprises inoculating into said compost, after peak heating has been achieved but before substantial recolonization of said compost by mesophilic microorganism has occurred, a microorganism culture combination consisting essentially of at least one fungus antagonistic to *Rhizoctonia solani* and suppressive to plant disease caused thereby and at least one bacterium antagonistic to *Pythium ultimum* and suppressive to plant disease caused thereby with innoculating by at least 100 colony forming units each of said fungus and of said bacterium for each gram of the compost, based on dry weight of the compost.

4,642,132

AMINOTHIADIAZOLES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Ulrich Schirmer, Heidelberg; Peter Plath, Ludwigshafen; Hubert Sauter, Mannheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

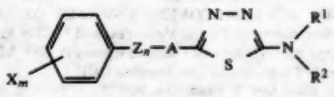
Continuation of Ser. No. 457,179, Jan. 11, 1983, abandoned. This application Dec. 26, 1984, Ser. No. 685,211

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201861; Jul. 23, 1982, 3227554

Int. Cl.[4] A01N *43/82;* C07D *285/12*

U.S. Cl. 71—90 12 Claims

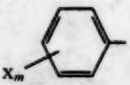
1. An aminothiadiazole of the formula



(I)

where R^1 and R^2 independently of one another are each hydrogen, C_1–C_{10}-alkyl, C_3–C_8-cycloalkyl, C_2–C_5-alkoxyalkyl, phenyl, benzyl, 2-phenylethyl, or R^1 and R^2 together form a butylene, pentylene, 1,4-dimethyl-3-oxapentylene or 2,4-dimethyl-3-oxapentylene group, A is an alkylene chain of 2 to

4 carbon atoms which is unsubstituted or substituted by C_1–C_4-alkyl, Z is oxygen, n is 0 or 1, X is halogen, cyano, nitro, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-alkylthio, C_1–C_4-alkylsulfonyl, C_3–C_6-cycloalkyl, phenyl or unsubstituted or halogen-substituted aryloxy and m is 0, 1, 2, 3 or 4, and where the radical



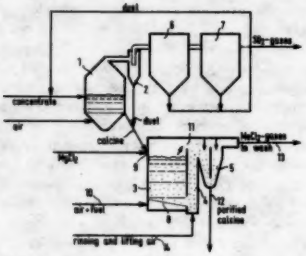
can be replaced by naphthyl which is unsubstituted or substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, with the proviso that R^1 and R^2 are not both hydrogen.

4,642,133

PROCESS FOR CHLORINATING VOLATILIZATION OF METALS WHICH ARE PRESENT IN OXIDIC IRON ORES OR CONCENTRATES

Juho K. Mäkinen, Vanha-Ulvila; Mauri J. Peuralinna, Harjavalta, and Olavi A. Aaltonen, Pori, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation of Ser. No. 286,021, Jul. 22, 1981, abandoned. This application Aug. 26, 1983, Ser. No. 527,194
Claims priority, application Finland, Aug. 20, 1980, 802626
Int. Cl.[4] C22B *1/08*
U.S. Cl. 75—2 4 Claims



1. A process for the chlorinating volatilization in a fluidized bed reactor of impurity metals detrimental to the production of iron from a raw material which contains the oxides of the impurity metals and iron or which forms them in an oxidizing atmosphere, comprising feeding preheated raw material at a high temperature of at least 900° C. and anhydrous magnesium chloride into an upper section of the fluidized bed reactor to chlorinate the impurity metals and maintaining the temperature above 900° C. throughout the following steps: feeding hot air into the fluidized bed through an inclined grate which is in a lower section of the fluidized bed reactor in order to volatilize the chlorides of the impurity metals, and discharging purified raw material from the lower section of the fluidized bed into a separate chamber, and rinsing the raw material in said separate chamber with an air flow the rate of which is substantially higher than that of the air flow fed into the fluidized bed.

4,642,134

PRECIOUS METAL RECOVERY USING UV OZONE

William P. Van Antwerp, Pacific Palisades, and Phillip A. Lincoln, Casitas Springs, both of Calif., assignors to GSP Metals & Chemicals Corporation, Los Angeles, Calif.

Filed Oct. 8, 1985, Ser. No. 785,582
Int. Cl.[4] C22B *3/00*
U.S. Cl. 75—101 R 30 Claims

1. A process for recovering precious metal from ore comprising the steps of:

(a) treating an acidic slurry of ore with activated oxygen; and subsequently

(b) leaching precious metal out with leaching chemicals wherein the activated oxygen is obtained as the product of an ultraviolet light ozone generator and wherein the activated oxygen is composed of at least ozone and hydroxyl.

4,642,135

PROCESS FOR TREATING CAST IRON MELTS WITH SILICON CARBIDE

Theodor Benecke, Munich, Fed. Rep. of Germany; Benno Lux, Vienna, Austria; Wolf-Dieter Schubert, Vienna, Austria; An Tuan Ta, Vienna, Austria, and Gerhard Kahr, Vienna, Austria, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 16, 1985, Ser. No. 766,635
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1984, 3431263
Int. Cl.[4] C21C *7/02*
U.S. Cl. 420—33 8 Claims

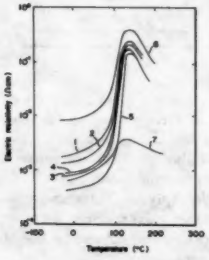
1. A process for treating a cast iron melt with silicon carbide which comprises: introducing into the cast iron melt, silicon carbide particles which have been subjected to oxidizing conditions to partially coat the silicon carbide particles with a covering containing silica.

4,642,136

PTC CERAMIC COMPOSITION

Noburu Fukushima, Tokyo; Hisashi Yoshino, and Shunji Nomura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 7, 1985, Ser. No. 699,302
Claims priority, application Japan, Jun. 11, 1984, 59-118207
Int. Cl.[4] C22C *29/12*
U.S. Cl. 75—234 7 Claims



1. A PTC ceramic composition which comprises (i) a fundamental component represented by the formula:

$$(1-x\mathrm{A})_2\mathrm{O}_3$$

wherein x denotes an atomic proportion and has a value within the range of $0.001 \leqq x \leqq 0.02$, and A is at least one of Cr and Al, and (ii) tin in an amount of 1 to 25 % by weight, based on the total weight of the composition.

4,642,137

MINERAL BINDER AND COMPOSITIONS EMPLOYING THE SAME

Richard F. Heitzmann, Pearland; Mark Fitzgerald, Houston, and James L. Sawyer, Friendswood, all of Tex., assignors to Lone Star Industries, Inc., Greenwich, Conn.

Filed Mar. 6, 1985, Ser. No. 708,689
Int. Cl.[4] C04B *7/00*
U.S. Cl. 106—85 12 Claims

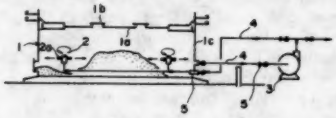
1. A binder composition for Portland cement comprising 100 parts, by weight, metakaolin and, based upon said metakaolin: 20 to 70 parts by weight slag

85 to 130 parts by weight of at least one material selected from the class consisting of fly ash, calcined shale, and calcined clay
70 to 215 parts amorphous silica
55 to 145 parts of a material selected from the class consisting of potassium silicate and potassium hydroxide, at least 55 parts being potassium silicate.

4,642,138
METHOD OF PREVENTING DEPOSITION OF SLUDGE IN LIQUID TANK AND OF REMOVING DEPOSITED SLUDGE

Hiroyasu Koyase; Kinsaku Funaki, and Atsuo Morita, all of Ibaraki, Japan, assignors to Kashima Engineering Co., Ltd., Ibaraki and Taiho Industrial Co., Ltd., Tokyo, both of, Japan

Filed Mar. 1, 1985, Ser. No. 706,980
Claims priority, application Japan, Mar. 24, 1984, 59-56884
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—22.18 **7 Claims**

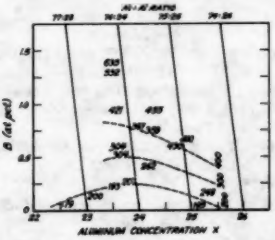


1. A method of preventing deposition of sludge and removing deposited sludge within a liquid tank having a side wall surface and a bottom, said method comprising the step of spraying a liquid through a plurality of rotatable spray devices arranged at predetemined positions in said tank, wherein said sprayed liquid is of the same type as in said tank; said spray devices have spray nozzles with a downwardly inclined spraying direction; said nozzles are 0.5 to 3.0 meters above said bottom of said tank, and liquid sprayed from said spray devices has a minimum flow speed of at least 0.3 meters per second at any position inside said tank and impinges against said side wall surface at a flow speed from 0.3 to 2.4 meters per second.

4,642,139
RAPIDLY SOLIDIFIED NICKEL ALUMINIDE OF IMPROVED STOICHIOMETRY AND DUCTILIZATION AND METHOD

Alan I. Taub, Schenectady; Shyh-Chin Huang, Latham, and Keh-Minn Chang, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,877
Int. Cl.[4] C22F *1/10*
U.S. Cl. 148—3 **11 Claims**



9. The method of forming a nickel aluminide of high strength which comprises
preparing a melt having a composition of the formula

$$(Ni_{1-x}Al_x)_yB_{100-y}$$

wherein x is between 0.235 and 0.245, and
100−y is between 0.5 and 1.5
rapidly solidifying the melt to form a $L1_2$ crystal structure, and annealing the rapidly solidified melt to form a strong product.

4,642,140
PROCESS FOR PRODUCING CHALCOGENIDE SEMICONDUCTORS

Rommel Noufi, Westminster, Colo., and Yih-Wen Chen, Omaha, Nebr., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

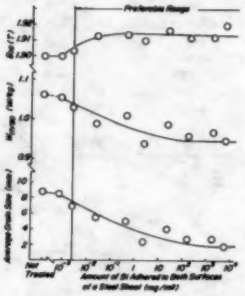
Filed Apr. 30, 1985, Ser. No. 728,977
Int. Cl.[4] C23C *22/48, 22/52*
U.S. Cl. 148—6.24 **18 Claims**

1. A process for producing a chalcogenide semiconductor material for use in photovoltaic semiconductor devices, said process comprising:
a. forming a solution containing ions from at least one chalcogen and providing said solution with a pH in a range of 1–2 so as to provide said semiconductor material with suitable performance characteristics when used as said photovoltaic semiconductor device;
b. forming a metal base layer containing a sufficient number of metal elements to form at least a ternary chalcogenide semiconductor material upon being chalcogenized with said solution; and
c. contacting said metal base layer with said solution at about ambient temperature so as to chalcogenize said metal base layer and form said at least ternary chalcogenide semiconductor material.

4,642,141
METHOD FOR PRODUCING GRAIN-ORIENTED SILICON STEEL SHEETS

Yoshiaki Iida, and Katsuo Iwamoto, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed May 24, 1985, Ser. No. 738,019
Claims priority, application Japan, May 24, 1984, 59-103696; Jun. 5, 1984, 59-113790; Mar. 8, 1985, 60-44940
Int. Cl.[4] H01F *1/04*
U.S. Cl. 148—113 **12 Claims**



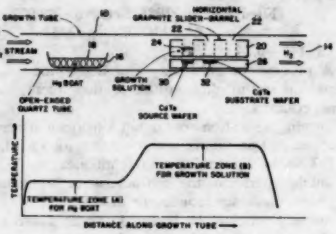
1. In a method for producing grain-oriented silicon steel sheets, wherein a hot rolled silicon steel sheet containing at least one of S, Se and Te as an inhibitor for the growth of primary recrystallization grains is subjected to at least one stage cold rolling, the finally cold rolled steel sheet is subjected to a decarburization annealing, and the decarburized steel sheet is applied with an annealing separator consisting mainly of MgO and then subjected to a final annealing, the improvement comprising adhering uniformly at least one member selected from the group consisting of elements of Ge, Sn, Pb, As, Bi and Zn and compounds containing these elements to the surfaces of

the finally cold rolled steel sheet at the stage between the final cold rolling and the decarburization annealing.

4,642,142
PROCESS FOR MAKING MERCURY CADMIUM TELLURIDE

Theodore C. Harman, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 379,530, May 19, 1982, abandoned. This application Aug. 28, 1985, Ser. No. 770,821
Int. Cl.[4] H01L *21/368*
U.S. Cl. 148—171 **9 Claims**

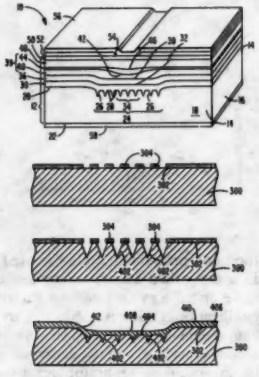


1. The process for forming mercury cadmium telluride which comprises forming an atmosphere of mercury vapor from liquid mercury having a desired temperature between about 25° C. and 350° C. while maintaining the liquid mercury temperature within about 1° C. of the desired temperature and contacting the mercury vapor with a growth solution consisting of mercury, cadmium, and tellurium having a desired temperature between about 425° C. and 550° C. and maintaining the growth solution temperature within about 1° C. of the desired temperature.

4,642,143
METHOD OF MAKING A DOUBLE HETEROSTRUCTURE LASER

John C. Connolly, Cranbury, and Dan Botez, Mt. Holly, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Division of Ser. No. 505,485, Jun. 17, 1983, Pat. No. 4,569,054. This application Aug. 30, 1985, Ser. No. 771,357
Int. Cl.[4] H01L *21/208*
U.S. Cl. 148—171 **18 Claims**



1. A method of fabricating a laser which includes a body of semiconductor material including end facets and a substrate, and having a guide layer and an active layer which taper in thickness in the lateral direction, which method comprises the steps of:

forming a plurality of corrugations comprising adjacent vee-shaped channels in a major surface of the substrate and which extend between the end facets;

forming a first solution, comprising the elements to be deposited and an element which is also a solvent for the substrate material, having a super-saturated growth condition for planar and concave surfaces and an under-saturated growth condition for convex surfaces;

contacting the surface of the substrate having the corrugations therein to the first solution thereby causing a melting of the convex portions of the corrugations to form a plurality of mesas between the concave portions of the corrugations, wherein the surfaces of the mesas are below the surface of the substrate, thereby forming a trough in the surface of the substrate and causing deposition of a first layer to occur over the concave portions of the corrugations and the mesas and the surrounding substrate; and

sequentially contacting the substrate with the first layer thereon to different solutions to deposit the remaining layers of the laser over the surface of the first layer.

10. A method of locally delaying the deposition of a layer on a surface of a body comprising the steps of:

forming a plurality of corrugations on the surface comprising adjacent vee-shaped channels;

forming a first solution, comprising the elements to be deposited and an element which is a solvent for the material of the body, having a super-saturated growth condition for planar and concave portions of the surface and an under-saturated growth condition for convex portions of the surface of the substrate;

contacting the surface having the corrugations therein to the first solution thereby causing a melting of the convex portions of the corrugations to form a plurality of mesas between the concave portions, wherein the surfaces of the mesas are below the surface of the substrate, thereby forming a trough in the surface of the substrate and causing deposition of the layer to occur over the concave portions of the corrugations and the mesas and the surrounding substrate; whereby the initial rate of deposition of the layer over the corrugated portion of the surface is less than the rate of deposition over the uncorrugated portion of the substrate.

4,642,144
PROXIMITY DOPING OF AMORPHOUS SEMICONDUCTORS

Thomas J. Tiedje, Lebanon, and Benjamin Abeles, Princeton, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

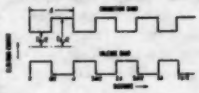
Filed Oct. 6, 1983, Ser. No. 539,480
Int. Cl.[4] H01L *21/203, 29/06*
U.S. Cl. 148—175 **14 Claims**

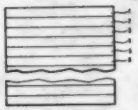
1. A method of doping amorphous semiconductor material having a first bandgap comprising:

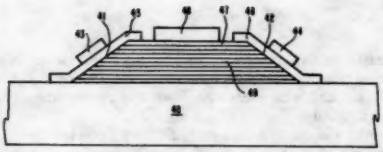
(a) forming said first bandgap amorphous material in a first plurality of spaced apart layers; and

(b) forming a second plurality of amorphous semiconductor or insulator layers having a second bandgap wider than said first bandgap interleaved with and contiguous with said first plurality such that the conduction and valence band steps at the interfaces between said first plurality and said second plurality is of sufficent magnitude to confine

carriers, such that the Fermi levels in the two layers are different so that carriers in the gap states transfer from







said second plurality of layers to said first plurality causing the conductivity of said material to increase.

4,642,145

NICKEL ALLOY

Tsuyoshi Masumoto; Akihisa Inoue, both of Miyagi, and Hiroyuki Tomioka, Kyoto, all of Japan, assignors to Tsuyoshi Masumoto, Miyagi and Unitika Ltd., Hyogo, both of, Japan

Filed Mar. 8, 1983, Ser. No. 473,301

Claims priority, application Japan, Mar. 8, 1982, 57-36226; Aug. 30, 1982, 57-150361

Int. Cl.⁴ C22C *38/08, 19/00*

U.S. Cl. 148—336 **12 Claims**

3. A Ni-based alloy consisting essentially of:

8 to 34 atom% Al;

15 to 70 atom% total of at least one element selected from the group consisting of Fe and Co, wherein if Fe is present it is present in an amount of at least 15 atom%;

and if Co is present it is present in an amount of at least 25 atom%; and

the balance of the alloy to make up 100 atom% substantially pure Ni wherein the alloy contains a B-2 type intermetallic compound, and the compound has crystals which have a minute particle diameter of not more than about 10 microns.

4,642,146

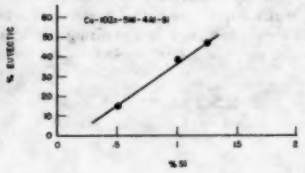
ALPHA COPPER BASE ALLOY ADAPTED TO BE FORMED AS A SEMI-SOLID METAL SLURRY

Sankaranarayanan Ashok, Bethany, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 599,107, Apr. 11, 1984, Pat. No. 4,569,702. This application Oct. 11, 1985, Ser. No. 786,564

Int. Cl.⁴ C22C *9/01*

U.S. Cl. 148—414 **13 Claims**



1. A copper base alloy adapted to have a a structure comprising a plurality of discrete particles in a surrounding metal matrix, said particles and said matrix being comprised such that when said alloy is heated to a desired temperature said alloy forms a semi-solid slurry wherein the matrix is in a molten condition comprising from about 5% to about 40% liquid and said particles are within said liquid matrix, said alloy consisting essentially of from about 3% to about 6% nickel, from about 2% to about 4.25% aluminum, from about 0.25% to about 1.2% silicon, from about 5% to about 15% zinc, up to about 5% iron and the balance essentially copper.

4,642,147

HIGH ENERGY COMPOSITION

Juho Hyyppä, Rauma, Finland, assignor to Raikka Oy, Helsinki, Finland

Filed Jun. 3, 1985, Ser. No. 740,830

Claims priority, application Finland, Jun. 19, 1984, 842470

Int. Cl.⁴ C06B *45/10*

U.S. Cl. 149—19.9 **5 Claims**

1. A propellant composition intended to react only with its own components and not with atmospheric oxygen during its propulsive reaction, comprising:

finely divided aluminum metal as a fuel, and lithium perchlorate or a mixture of lithium perchlorate and ammonium perchlorate as an oxidizer, said aluminum being present by weight percentage between about 25% and about 50%, and the oxidizer and any other oxygen containing substance in the composition being present in stoichiometric proportion to provide too little oxygen to oxidize all of the aluminum to aluminum oxide, but sufficient to oxidize all of it at least to aluminum suboxide at a temperatures in excess of 2,200 degrees C.

4,642,148

METHOD FOR PRODUCING A MULTILAYER CERAMIC CIRCUIT BOARD

Kazuaki Kurihara, Atsugi; Nobuo Kamehara, Isehara; Hiromitsu Yokoyama, Sagamihara; Hiromi Ogawa, Yokohama; Kishio Yokouchi, Zama; Yoshihiko Imanaka, Atsugi, and Koichi Niwa, Tama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed May 28, 1985, Ser. No. 738,658

Claims priority, application Japan, May 31, 1984, 59-109490

Int. Cl.⁴ B32B *31/06*

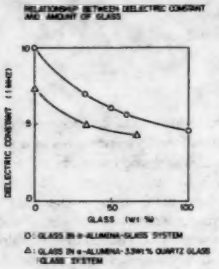
U.S. Cl. 156—89 **7 Claims**

1. A method for producing a multilayer ceramic circuit board for use with copper conductors comprising the steps of:

forming a multilayer structure comprising patterns of copper-based paste and glass-ceramic layers laminated alter-

nately, at least the glass-ceramic layers located between the patterns of copper-based paste consisting essentially of a mixture of 10 percent to 75 percent by weight of α-alumina, 20 percent to 60 percent by weight of crystallizable or noncrystallizable glass which is sinterable at a temperature lower than the melting point of copper and not coalescent at temperatures up to 900° C., and 5 percent to 70 percent by weight of quartz glass, based on the total weight of the glass-ceramic, blended with a binder comprising a thermally depolymerizable resin;

prefiring the multilayer structure in an inert atmosphere containing water vapor, the partial pressure of which is 0.005 to 0.3 atmosphere, in a first prefiring step at a temperature in the range of 350° C. to 450° C. and for a time



sufficient to depolymerize substantially all of the resin and in second prefiring step at a temperature in the range of 650° C. to 900° C. and for a time sufficient to assure completion of depolymerization of the resin and to reduce any residual carbon to a desired minimal level, while producing no substantial change in the state of the glass components and the copper; and

firing the multilayer structure in an inert atmosphere containing no water vapor at a temperature in the range of from above 900° C. to below the melting point of copper so as to coalesce the crystallizable or noncrystallizable glass and thereby sinter the glass-ceramic without affecting the metallic state of the copper or coalescing the α-alumina and quartz glass components.

4,642,149

HEAT EXCHANGER WITH RADIAL BAFFLES

Jay Harper, 1633 W. 132nd St., Gardena, Calif. 90249

Continuation of Ser. No. 370,085, Apr. 20, 1982, abandoned. This application Oct. 10, 1985, Ser. No. 786,045

Int. Cl.[4] F28D *7/00*; **F28F** *9/22*; **G05D** *15/00*

U.S. Cl. 165—160 **8 Claims**

1. A shell and tube type of heat exchanger in which ambient air is used as the cooling medium, comprising:

a housing including a cylindrical peripheral wall having spaced parallel end walls forming a cylindrical core cavity,

a fluid inlet and outlet means mounted on said housing for flow of fluid into and out of said cavity,

a planar baffle mounted in said cavity and contacting said peripheral wall to divide said cavity into two chambers,

said inlet means communicating with one chamber and said outlet means communicating with the other of said chambers,

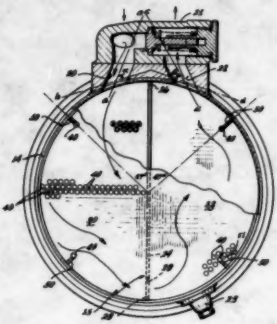
said end walls including a plurality of spaced apertures and having a face exposed to ambient air,

a plurality of heat exchanger tubes mounted in said end walls and extending into said cavity and disposed in parallel relation between said end walls,

said tubes being open at each end for passage through said tubes of ambient air to effect cooling of the fluid flowing through said cavity,

said baffle having an aperture therein located to form a passageway from one to the other of said chambers in a region remote from said inlet and outlet means,

each chamber including at least two spaced flanges extending radially inwardly of said cavity from said peripheral wall,



at least the flanges closest to said inlet and outlet means being positioned between 40 and 55 degrees on either side of said baffle as measured from the center line of said cavity, and

said inlet and outlet means each defining a conduit having an axis which is at an angle of about 30 degrees relative to a line tangent to said peripheral wall at the intersection of said axis with said peripheral wall.

4,642,150

METHOD AND APPARATUS FOR SECURING ELASTIC TAPES TO A MATERIAL WEB

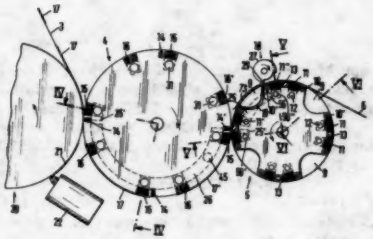
Kurt Stemmler, Neuwied, Fed. Rep. of Germany, assignor to Winkler+Duennebier Maschinenfabrik+Eisengiesserei GmbH & Co. KG., Neuwied, Fed. Rep. of Germany

Filed Nov. 22, 1985, Ser. No. 801,138

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1984, 3444331

Int. Cl.[4] B32B *31/08*

U.S. Cl. 156—164 **15 Claims**



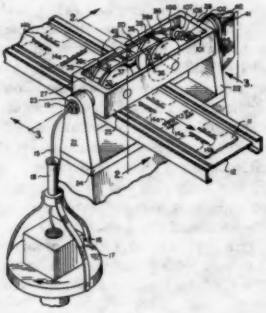
4. An apparatus for securing a determined length of an elastic tape to a material web, comprising:

(a) means for continuously advancing said material web,

(b) first tape supply roller means (5) for discontinuously advancing said elastic tape (6), said first roller means having a surface with curved depressions (9) in said surface for intermittently gathering sections of said elastic tape into said depressions (9) to substantially free said sections from any stretching force to assure a uniform length for each section,

(c) second continuously rotating stretching roller means (4) arranged for cooperation with said first roller means for sequentially stretching said gathered tape sections,
(d) cutting means arranged for cutting off a stretched tape section, and
(e) means for sequentially transferring and bonding cut-off tape sections to said advancing material web at substantially uniform spacings between neighboring tape sections bonded to said material web.

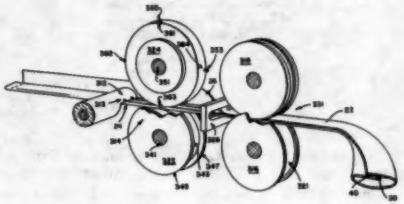
4,642,151
APPARATUS AND METHOD FOR APPLYING TRANSVERSE ELASTIC SEGMENTS
Joseph D. Coenen, Outagamie County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jul. 29, 1985, Ser. No. 760,190
Int. Cl.[4] B32B *31/08*
U.S. Cl. 156—164 **15 Claims**



1. An apparatus for applying linear segments of an elastic strip to a base material moving in a production line which comprises:
a first pair of pulleys with a first belt mounted thereon, and operating generally in a first plane;
a second pair of pulleys with a second belt mounted thereon, said second pair of pulleys having a combined diameter less than the combined diameter of said first pair, and said second belt having a length less than that of said first belt, said second pair of pulleys and said second belt operating generally in a second plane which is substantially parallel to said first plane;
at least three gripping members with a first portion attached to said first belt and spaced equally along said first belt, and a second portion extending from said first belt in a direction substantially perpendicular to said first plane;
means for driving said first pair of pulleys;
means for driving said second pair of pulleys at a combined angular velocity such that said second belt travels at a linear velocity equal to the linear velocity of said first belt;
said first pair of pulleys and said second pair of pulleys being arranged such that upon rotation of said first pair of pulleys said second portions of said gripping members are brought into and out of contact with said second belt, and such that at least one of said second portions is in contact with said second belt at all points of said rotation;
a source of a continuous elastic strip;
means for guiding said elastic strip from said source to a point in contact with said second belt;
means for cutting the elastic strip material into linear segments.

13. A method for applying linear elastic segments to a substrate, said method comprising the steps of:
(a) providing an elastic gripping unit comprising a first pair of pulleys with a first belt mounted thereon; a second pair of pulleys with a second belt mounted thereon, said second pair of pulleys having a combined diameter less than that of said first pair, said second belt having a length less than that of said first belt; at least three gripping members attached to said first belt and extending therefrom; said first and second pair of pulleys spatially arranged so that upon rotation of said first pair of pulleys, the gripping members are brought into and out of contact with said second belt;
(b) providing a continuous elastic strip;
(c) providing a cutting means whereby said continuous elastic strip is cut into segments;
(d) rotating said first and second pairs of pulleys at respective angular velocities such that said first and second belts travel at the same linear velocity;
(e) guiding the continuous elastic strip to a point in contact with said second belt;
(f) gripping a portion of the continuous elastic strip between one of said gripping members and the second belt;
(g) pulling the gripped portion of the continuous elastic material in a direction transverse to the direction of the production line by continued rotation of said first and second pairs of pulleys;
(h) bringing the pulled portion of the continuous elastic material into contact with said substrate;
(i) cutting said continuous elastic strip into a segment of desired length;
(j) releasing the segment from between said one of said gripping members and said second belt by continued rotation of said first and second pairs of pulleys.

4,642,152
DRIP IRRIGATION SYSTEM EMPLOYING FLOW REGULATION
Richard D. Chapin, 368 N. Colorado Ave., Watertown, N.Y. 13601
Division of Ser. No. 364,213, Apr. 1, 1982, Pat. No. 4,473,191.
This application Jul. 25, 1984, Ser. No. 634,475
The portion of the term of this patent subsequent to Feb. 25, 2003, has been disclaimed.
Int. Cl.[4] B29C *53/00*
U.S. Cl. 156—203 **20 Claims**



17. Apparatus for manufacturing an elongated fluid distributing hose made from an elongated plastic film and an elongated flat plastic ribbon;
means for moving the film in a desired direction that is essentially parallel to the longitudinal axis of the film;
means for orienting the film to expose one of the two surfaces of the film along one of the longitudinal margins of the film;
extrusion nozzle means for extruding said flat plastic ribbon, said nozzle means oriented relative to said one surface of the film so that said ribbon is deposited on and attached to said one surface essentially parallel to the longitudinal axis of the said film;
molding means to form permanent depressions in said plastic ribbon into a predetermined pattern of inlet and outlet stations with passageways therebetween;
folding means for folding the film about its longitudinal axis so that one of the surfaces of the film along the other of

the longitudinal margins of the film comes into contact with said plastic ribbon; and

means for securing said other margin to said plastic ribbon; said inlets and outlets together with said passageways forming fluid passage from the interior of the hose to the exterior of said hose.

19. A method for manufacturing an elongated fluid distributing hose made from an elongated plastic film and an elongated flat plastic ribbon;

moving the film in a desired direction that is essentially parallel to the longitudinal axis of the film;

orienting the film to expose one of the two surfaces of the film along one of the longitudinal margins of the film;

extruding said flat plastic ribbon from a nozzle means, said nozzle means oriented relative to said one surface of the film so that said ribbon is deposited on and attached to said one surface essentially parallel to the longitudinal axis of the said film;

forming permanent depressions in said plastic ribbon into a predetermined pattern of inlet and outlet stations with passageways therebetween;

folding the film about its longitudinal axis so that one of the surfaces of the film along the other of the longitudinal margins of the film comes into contact with said plastic ribbon; and

securing said other margin to said plastic ribbon; said inlets and outlets together with said passageways forming fluid passages from the interior of the hose to the exterior of said hose.

4,642,153

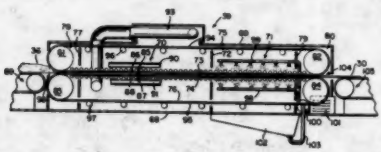
METHOD AND APPARATUS FOR MAKING A SHEET OF MATERIAL

Thomas E. Lohr, Mount Clemens, Mich., assignor to Allen Industries, Inc., Troy, Mich.

Continuation of Ser. No. 499,604, May 31, 1983, abandoned. This application Dec. 3, 1984, Ser. No. 677,433

Int. Cl.⁴ B30B *5/06*

U.S. Cl. 156—296 **18 Claims**



1. In a method for making a sheet of material from a fiber textile-like mat means of fiber means mixed with fibers of thermoplastic material and being subject to heat and pressure by press means to melt said thermoplastic fibers and densify said mat means so that upon subsequent cooling of said thermoplastic material in said densified mat means said cooled thermoplastic material sets and thus causes said cooled densified mat means to be a substantially rigid sheet of material, said method comprising the steps of forming said press means to comprise a pair of movable endless belts having adjacent runs adapted to receive said mat means therebetween and having outer returning runs, compressing said mat means between said adjacent runs of said belts with compressing means of said press means to densify said mat means, heating said mat means between said adjacent runs of said belts with heating means of said press means, and cooling said mat means between said adjacent runs of said belts with cooling means of said press means after said mat means has been heated and densified by said heating means and said compressing means, the improvement comprising the steps of also preheating said outer runs of said belts with said heating means that heats said mat means before said mat means is received between said adjacent runs of said belts, disposing a chamber defining means to substantially surround said outer runs and said adjacent runs of said belts, forming said chamber defining means to have two adjacent sections substantially separate from each other and through which said outer runs and said adjacent runs of said belts serially move, forming one of said sections to have said heating means therein, and forming the other of said sections to have said cooling means therein.

10. In an apparatus for making a sheet of material from a fiber textile-like mat means of fiber means mixed with fibers of thermoplastic material and being subject to heat and pressure by press means to melt said thermoplastic fibers and densify said mat means so that upon subsequent cooling of said thermoplastic material in said densified mat means said cooled thermoplastic material sets and thus causes said cooled densified mat means to be a substantially rigid sheet of material, said press means comprising a pair of movable endless belts having adjacent runs adapted to receive said mat means therebetween and having outer returning runs, said press means having compressing means for compressing said mat means between said adjacent runs of said belts to densify said mat means, said press means having heating means for heating said mat means between said adjacent runs of said belts, said press means having cooling means for cooling said mat means between said adjacent runs of said belts after said mat means has been heated and densified by said heating means and said compressing means, the improvement wherein said heating means that heats said mat means also preheats said outer runs of said belts before said mat means is received between said adjacent runs of said belts, said apparatus having a chamber defining means substantially surrounding said outer runs and said adjacent runs of said belts, said chamber defining means having two adjacent sections substantially separated from each other and through which said outer runs and said adjacent runs of said belts serially move, one of said sections having said heating means therein and the other of said sections having said cooling means therein.

4,642,154

METHOD AND APPARATUS FOR WELDING CONDUITS

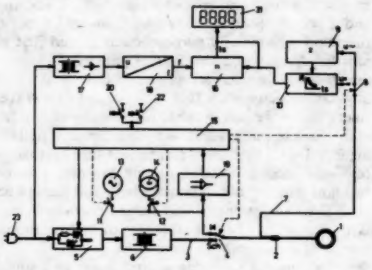
Alfred Thalmann, Uhwiesen; Ernesto Lehmann, Schaffhausen; Emil Roth, Gümligen, and Walter Gerber, Rüfenacht, all of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Dec. 15, 1982, Ser. No. 450,038

Claims priority, application Switzerland, Dec. 23, 1981, 8239/81

Int. Cl.⁴ B32B *1/08*

U.S. Cl. 156—272.2 **18 Claims**



1. A method of welding together plastic conduit elements using shaped elements containing windings of electrically conductive heating wire and supplying electrical energy to the wire by a control apparatus connected to a source of electrical energy such that an appropriate heating current is passed through the wire to heat and weld the components including the steps of

manually producing a start signal,

passing a direct current through the windings, of heating wire and measuring the ohmic resistance of the windings,

allotting a time interval for the welding process by automatically selecting a number of counts as a function of the measured ohmic resistance corresponding to a selected one of stored a plurality of predetermined relationships based on conduit element type and shaped element type,

storing the number of counts in a counting device,

initiating the flow of heating current,

supplying impulses to the counting device to reduce the count to zero, and

terminating the flow of heating current when the count reaches zero.

4,642,155

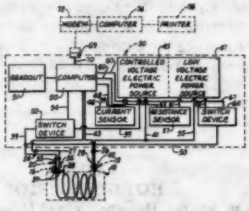
THERMOPLASTIC FITTING ELECTRIC HEAT WELDING METHOD AND APPARATUS

Russel G. Ramsey, Holdenville, Okla., assignor to Central Plastics Company, Shawnee, Okla.

Continuation-in-part of Ser. No. 734,836, May 16, 1985, Pat. No. 4,602,148. This application Jan. 29, 1986, Ser. No. 823,682

Int. Cl.[4] B32B *31/26*

U.S. Cl. 156—359 **15 Claims**



1. A method of electrically heat welding a thermoplastic fitting having an electric resistance heating element disposed therein whereby a predetermined regulated quantity of electric power is supplied to the heating element during the welding process and the making of a high quality weld is insured comprising the steps of:

(a) connecting said heating element of said fitting to an electric power source;

(b) supplying electric power to said heating element at a minimum voltage level for measuring the resistance of said element without significantly heating said element;

(c) measuring the resistance of aid heating element and thereby determining the initial temperature of said element;

(d) supplying electric power to said heating element at a controlled voltage whereby said element is heated;

(e) sensing the initial magnitude of the current flowing through said heating element and comparing such magnitude and said initial temperature of said element with predetermined current levels for heating elements of various sizes of fittings at various temperatures to thereby determine the size of said fitting being welded and the total time the controlled voltage electric power should be supplied to said heating element of said fitting to insure the making of a high quality weld;

(f) continuing to sense the magnitude of the current flowing through said heating element over the time said controlled voltage electric power is supplied thereto and comparing such magnitude at predetermined time intervals with predetermined current levels for the size of fitting determined in step (e) to thereby determine if the welding process is proceeding abnormally at such time intervals; and

(g) terminating the supply of electric power to said heating element of said fitting when it is determined that said welding process is proceeding abnormally in step (f) or otherwise at the end of the total time required for the making of a high quality weld as determined in accordance with step (e).

11. Apparatus for electrically heat welding a thermoplastic fitting having an electric resistance heating element disposed therein connected to a pair of electric contacts attached to said fitting whereby a regulated quantity of electric power is supplied to the heating element during the welding process and the making of a high quality weld is insured comprising:

(a) first electric power generating means for producing controlled voltage electric power to heat said heating element of said fitting;

(b) second electric power generating means for producing low voltage electric power for measuring the resistance of said element without significantly heating said element;

(c) current sensor means for sensing the magnitude of the current flow from said first electric power generating means electrically connected thereto;

(d) resistance sensor means for sensing the magnitude of the resistance of said heating element electrically connected to said second electric power generating means;

(e) electric cable means connected to said first and second electric power generating means and adapted for removable connection to said electric contacts of said fitting for conducting electric power to said electric resistance heating element of said fitting;

(f) switch means electrically connected between said first and second electric power generating means and said cable means; and

(g) computer means operably connected to said current sensor means, said resistance sensor means and said switch means for receiving the resistance of said heating element and determining the initial and final temperatures of said element therefrom, for receiving and comparing the initial temperature of said heating element and the initial magnitude of the current flowing from said first electric power generating means through said heating element with predetermined temperatures and current levels for various sizes of fittings and thereby determining the size of fitting being welded and the total time the constant voltage power from said first power generating means should be supplied to said heating element for the making of a high quality weld, for comparing the magnitude of the current flowing through said heating element from said first power generating means at predetermined time intervals with predetermined current levels for the size of fitting being welded to thereby determine if the welding process is proceeding abnormally at such time intervals, for operating said switch means to start and terminate the supply of electric power to said heating element from said first and second electric power generating means, and for operating said switch means to terminate the supply of electric power to said heating element from said first electric power generating means when said welding process is proceeding abnormally or otherwise at the end of the total time determined to be required for the making of a high quality weld.

4,642,156

APPARATUS FOR FORMING A REINFORCING BAND ON A SECTIONAL SEALING LINER

Ralph Jost, Füllinsdorf, Switzerland, assignor to Hobas Engineering & Durotec AG, Switzerland

Filed Mar. 8, 1985, Ser. No. 709,502

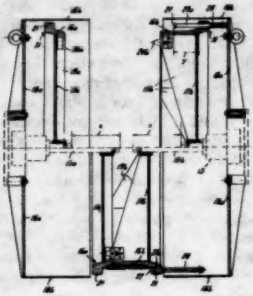
Claims priority, application Switzerland, Mar. 9, 1984, 1176/84

Int. Cl.[4] B65H *81/00*

U.S. Cl. 156—425 **9 Claims**

1. An apparatus for forming a sealing sleeve for tubes, comprising first and second opposed mold parts, first and second coaxial shafts secured to said respective mold parts, first and second brackets for carrying said respective shafts, first and second linear drive means connected to said respective shafts

and mounted on said respective brackets for moving said shafts axially toward each other to close said mold parts and axially away from each other to open said mold parts, one of said mold parts having a side circumferential wall which is axially longer than the other of said mold parts, coupling means having at least one coupling part connected to each of said mold parts for automatically rotationally engaging said first and second mold parts upon closing said mold parts to bring said coupling parts of said coupling means together, said coupling parts of said coupling means being automatically disconnected from each other with opening of said mold parts, rotary drive means



mounted on only one of said brackets and connected only to one of said shafts mounted on said one bracket to rotate said first and second molding parts when said molding parts are closed, a plurality of pushers movably mounted with respect to and associated with said axial longer mold part, pusher drive means associated with said bracket which carries said shaft of said longer mold part for automatically moving said pushers when said mold parts are opened, and a programmable common controller connected to said rotary drive means and said linear drive means for opening and closing said mold parts and for rotating said mold parts according to a program.

4,642,157

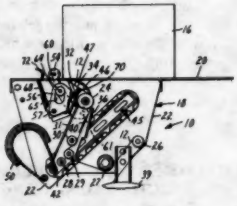
TAPE APPLYING DEVICE

Michael J. Cavanagh, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 25, 1985, Ser. No. 791,407

Int. Cl.[4] B31C *1/00*

U.S. Cl. 156—468 **5 Claims**



1. A device adapted for applying lengths of pressure sensitive adhesive coated tape from a supply length of tape seriatim on the peripheries of rectangular objects moved along a predetermined path in a first direction past the device, said device comprising:

a frame;

an application member having an arcuate periphery;

means adapted for defining a tape route for a said supply length of tape to the arcuate periphery of said application member with the adhesive coating disposed away from said application member;

means for mounting said application member on said frame to afford movement thereof from a contact position with said application member in said path to afford contact between a said length of tape disposed along said application member and the leading surface of a said object driven along said path in said first direction to adhere the tape to the leading surface object, to a second position while pressing tape against the leading surface of the object, to a third position with said application member spaced from said path and back to said contact position;

cam means adapted to engage an object for moving said application member to said third position after movement of the leading surface of a said object past said application member at said second position so that the application member will guide the tape to be applied to the article along a path between the front surface of the article and the application member that forms a decreasing acute angle with the side surface of the article after the article moves past the application member; and

means mounted on said frame including a knife blade having a cutting edge, and adapted to be activated by movement of a said object along the path past the application member for moving the cutting edge of the knife blade generally in synchronism with tape moving along said path portion while causing the cutting edge to intersect the tape along said path portion to sever it.

4,642,158

HOT GLUE PISTOL

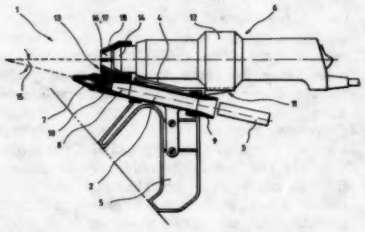
Heinrich W. Steinel, Herzebrock, and Hans Siwon, Obing, both of Fed. Rep. of Germany, assignors to Steinel GmbH & Co., K.G., Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,930

Claims priority, application European Pat. Off., Feb. 29, 1984, 84102136.3

Int. Cl.[4] B67D *5/62*

U.S. Cl. 156—497 **15 Claims**



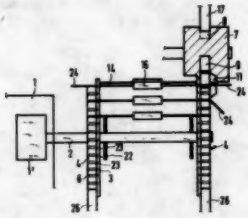
1. A hot glue pistol for melting and dispensing a hot melt glue, said pistol being of the type including a guide channel for the glue to be melted, a dispenser nozzle at one end of said guide channel, heating means in the form of a hot air blower for melting said glue, the hot air blower having a hot air tube with an outlet defining a discharge end of said hot air blower located adjacent said dispenser nozzle, and heat transfer means connected to at least one of said guide channel and said dispenser nozzle and projecting into the hot air flow produced by said hot air blower, the improvement comprising said heat transfer means being disposed substantially entirely outside said hot air blower and being positioned downstream of the discharge end thereof in a position in which it is fully exposed to the hot air flow therefrom.

4,642,159

APPARATUS FOR LINING UP ELECTRICAL COMPONENTS TO FORM A BELT

Thomas Weresch, Greschbachstrasse 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Oct. 30, 1984, Ser. No. 666,308
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3346997
Int. Cl.[4] B32B *31/10, 31/18*
U.S. Cl. 156—510 8 Claims



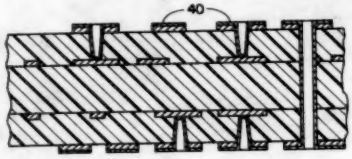
1. An apparatus for aligning electrical components with two aligned connecting wires to form a belt, wherein first and second adhesive tapes, drawn from a separate delivery spool are secured to the aligned connecting wires, the apparatus including two rotary drivable conveying gear wheels arranged on a shaft and adapted to receive the connecting wires in tooth means formed therein, two rollers are arranged on the shaft, each of said rollers being adapted to guide one of the adhesive tapes, pressing means for pressing the second adhesive tape in a congruent manner on the first adhesive tape while incorporating the connecting wires, and a compact working means associated with each of said rollers, said compact working means including guidance and alignment means for the second adhesive tape, the pressing means and a cutting means for cutting off the connecting wires of the electrical components.

4,642,160

MULTILAYER CIRCUIT BOARD MANUFACTURING

Larry W. Burgess, Tigard, Oreg., assignor to Interconnect Technology Inc., Beaverton, Oreg.

Filed Aug. 12, 1985, Ser. No. 764,497
Int. Cl.[4] C23F *1/02;* B44C *1/22;* C03C *15/00;* B29C *17/08*
U.S. Cl. 156—630 4 Claims



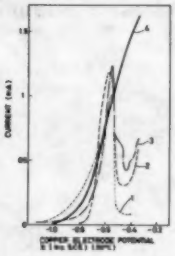
1. A method of manufacturing a circuit board, comprising forming a conductor run layer on one face of a core layer, depositing a layer of dielectric material over the conductor run layer, depositing an outer layer of conductive material over the layer of dielectric material, locally removing material of the outer layer so as to expose the dielectric material, removing the exposed dielectric material so as to form an opening through which the conductor run layer is exposed, and depositing conductive material into said opening so as to establish electrical connection between the conductor run layer and the outer layer of conductive material.

4,642,161

METHOD OF BONDING COPPER AND RESIN

Haruo Akahoshi, Hitachi; Kanji Murakami, Mito; Motoyo Wajima, Hitachi; Kiyonori Kogawa; Ritsuji Toba, both of Hadano, and Takeshi Shimazaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1986, Ser. No. 823,003
Claims priority, application Japan, Jan. 31, 1985, 60-16881
Int. Cl.[4] C23F *1/02;* B44C *1/22;* B31B *31/26*
U.S. Cl. 156—630 11 Claims



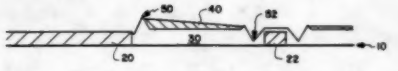
1. A method of bonding copper and a resin together comprising the steps of forming a copper oxide layer on the surface of copper by oxidiation of copper, reducing said copper oxide layer to metallic copper with a reducing solution, and bonding the surface of said metallic copper formed by said reduction and a resin together.

4,642,162

PLANARIZATION OF DIELECTRIC LAYERS IN INTEGRATED CIRCUITS

David J. Brownell, Maple Grove; Daniel C. Christensen, Plymouth; David G. Erie, Cottage Grove, and Daniel Youngner, Maple Grove, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 2, 1986, Ser. No. 815,603
Int. Cl.[4] B44C *1/22;* C03B *15/00*
U.S. Cl. 156—643 24 Claims



1. A method for the planarization of a semiconductor device comprising:

(a) defining on the device a first conductive layer having a preselected interconnect pattern;

(b) applying a first dielectric layer over the first conductive layer, the first layer having an irregular profile corresponding to the first conductive layer;

(c) applying a planarization layer over the first dielectric layer, the planarization layer having a smooth profile relative to that of the first dielectric layer;

(d) etching the planarization layer to substantially remove the planarization layer and expose raised portions of the first dielectric layer, some portion of the planarization layer remaining;

(e) etching the first dielectric layer to subtantially remove the first dielectric layer over the first conductive layer;

(f) removing the remaining planarization layer; and

(g) applying a second dielectric layer by bias sputter deposition.

4,642,163

METHOD OF MAKING ADHESIVE METAL LAYERS ON SUBSTRATES OF SYNTHETIC MATERIAL AND DEVICE PRODUCED THEREBY

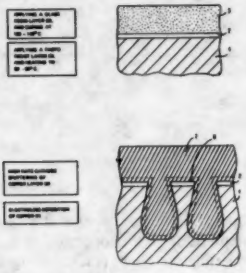
Johann Greschner, Pliezhausen; Friedrich W. Schwerdt, Herrenberg, and Hans J. Trumpp, Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,553

Claims priority, application European Pat. Off., Feb. 23, 1983, 83101752.0

Int. Cl.⁴ B44C *1/22*; B05D *3/00*

U.S. Cl. 156—643 **8 Claims**



1. A method for improving the metal adhesion characteristic of the surface of a non-conductor substrate, said method comprising the steps of:

applying a glass resin onto said surface of said substrate;

applying a photoresist on top of said glass resin layer;

roughening said photoresist to create a roughened contour thereon;

transferring said roughened contour from said photoresist to said glass resin by etching in a first gas atmosphere to form a perforation structure;

creating shallow recesses in said substrate by etching in a second gas atmosphere, wherein said recesses are made by substantially anisotropic etching followed by substantially isotropic etching, said recesses having a first width at said surface of said substrate and a second width greater than said first width in a region of said substrate below said surface.

4,642,164

METHOD AND ARRANGEMENT FOR WEB HANDLING

Hannu Hanhikoski; Lauri Kalliola, both of Järvenpää, Finland, and Hannu Mälkiä, Appleton, Wis., assignors to Oy Wärtsilä Ab, Helsinki, Finland

Filed Feb. 4, 1985, Ser. No. 698,075

Claims priority, application Finland, Feb. 8, 1984, 840515

Int. Cl.⁴ D21G *1/00, 7/00*

U.S. Cl. 162—207 **15 Claims**

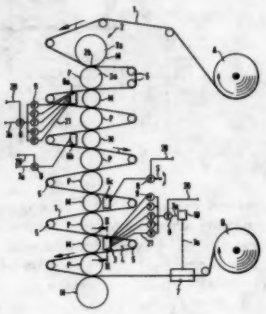
1. A method of moistening a running web that bounds at least partially a moistening pocket defined by first and second rolls that are in parallel, spaced apart relationship, the web contacting the first roll at two substantially diametrically opposed positions and being wrapped around the second roll, the method comprising

delivering moistening substance in its vapor phase into the moistening pocket at a plurality of moistening locations that are spaced apart in the transverse direction of the web, whereby the vapor condenses on the web and moistens it,

measuring the value of a property of the web at a plurality of measuring locations that are downstream of the moistening pocket with respect to the direction of travel of the web and are spaced apart in the transverse direction of the web, the value of the property depending upon the moistness of the web, and

separately controlling the rate at which moistening substance is delivered to each moistening location in dependence upon the measured value of said property.

7. Apparatus for moistening a running web, comprising first and second rolls in parallel, spaced apart relationship, about which the web can be trained so that the web contacts the first roll at two substantially diametrically opposed positions and is wrapped around the second roll and bounds at least partially a



moistening pocket, and the apparatus also comprising means for delivering moistening substance in its vapor phase into the moistening pocket at a plurality of moistening locations that are spaced apart in the transverse direction of the web, means for measuring the value of a property of the web at a plurality of locations that are downstream of the moistening pocket with respect to the direction of travel of the web and are spaced apart in the transverse direction of the web, the value of which property depends on the moistness of the web, and means for separately controlling the rate at which moistening substance is delivered to each moistening location in dependence upon the measured values of said property.

4,642,165

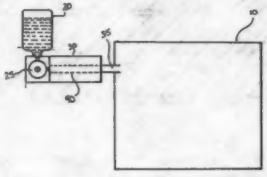
METHOD OF VAPORIZING MULTICOMPONENT LIQUIDS

Mark E. Bier, Pittsburgh, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Dec. 21, 1984, Ser. No. 684,461

Int. Cl.⁴ B01D *3/42*

U.S. Cl. 203—12 **5 Claims**



1. A method of vaporizing a multicomponent liquid comprising:

metering successive predetermined increments of said multicomponent liquid at a predetermined rate onto a heated surface of a vaporization chamber;

substantially instantaneously vaporizing each said liquid increment on said heated surface before the succeeding said liquid increment is metered onto said heated surface so that each liquid increment vaporization produces a

multicomponent vapor increment having substantially the same weight percent composition as said multicomponent liquid increment; and

passing each said vapor increment into a vacuum chamber.

4,642,166

DEHYDRATION OF FORMIC ACID BY EXTRACTIVE DISTILLATION

Lloyd Berg, and An-I Yeh, both of 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Feb. 10, 1986, Ser. No. 827,891
Int. Cl.[4] B01D *3/40*; C07C *53/02*
U.S. Cl. 203—15 11 Claims

1. A method for recovering formic acid from a mixture of formic acid and water which comprises distilling a mixture of formic acid and water in a rectification column in the presence of about one part of extractive agent per part of formic acid-water mixture, recovering water as overhead product and obtaining the formic acid and extractive agent from the still-pot, the extractive agent comprises at least a sulfone.

4,642,167

SEPARATION OF ISOBUTYL ACETATE FROM ISOBUTANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. 3rd Ave., and An-I Yeh, 709 S. 12th Ave., both of Bozeman, Mont. 59715

Filed Mar. 7, 1985, Ser. No. 709,415
The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.
Int. Cl.[4] B01D *3/40*
U.S. Cl. 203—60 2 Claims

1. A method for recovering isobutyl acetate from a mixture of isobutyl acetate, isobutanol and water which comprises distilling a mixture of isobutyl acetate, isobutanol and water in a rectification column in the presence of extractive agent, recovering isobutyl acetate and water as overhead product and obtaining the extractive agent and isobutanol from the bottoms of the rectification column, the extractive agent comprises N,N-dimethylacetamide.

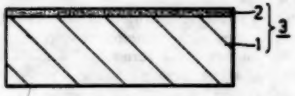
2. A method for recovering isobutyl acetate from a mixture of isobutyl acetate, isobutanol and water which comprises distilling a mixture of isobutyl acetate, isobutanol and water in a rectification column in the presence of extractive agent, recovering isobutyl acetate and water as overhead product and obtaining the extractive agent and isobutanol from the bottoms of the rectification column, the extractive agent comprises acetamide.

4,642,168

METAL LAYER PATTERNING METHOD

Yuji Imai, Chiba, Japan, assignor to TDK Corporation, Japan

Division of Ser. No. 511,403, Jul. 7, 1983. This application Aug. 20, 1984, Ser. No. 642,429
Claims priority, application Japan, Jul. 8, 1982, 57-118887; Nov. 30, 1982, 57-210466; Nov. 30, 1982, 57-210467; Nov. 30, 1982, 57-210468; Nov. 30, 1982, 57-210469; Nov. 30, 1982, 57-210470; Nov. 30, 1982, 57-210471; Nov. 30, 1982, 57-210472; Nov. 30, 1982, 57-210473; Dec. 20, 1982, 57-223551; Dec. 20, 1982, 57-223552; Dec. 20, 1982, 57-223553
Int. Cl.[4] C25F *3/04*
U.S. Cl. 204—129.65 36 Claims



1. A metal layer patterning method comprising the steps of:

forming a metal layer to be patterned on an insulating substrate;

forming a mask layer of a desired pattern on the metal layer; and

subjecting the metal layer to electrolytic etching by an electrolyte through the mask layer to form a patterned metal layer;

wherein the metal layer to be patterned is formed of aluminum;

wherein the electrolyte is a basic aqueous solution including a solute consisting principally of phosphoric acid;

wherein a DC constant-current source is connected between the metal layer and an electrode corresponding thereto;

wherein the temperature of the electrolyte is set to a constant value Te (°C.) and the density of current flowing across the metal layer to the electrolyte is set to a constant value larger than a value Je (mA/cm^2) determined by the constant value Te (°C.) of the electrolyte temperature;

wherein, letting J_1 (mA/cm^2) and J_2 (mA/cm^2) represent values of the densities of current flowing across the metal layer to the electrolyte in the case of the amount of side etching of the patterned metal layer being substantially zero when the electrolytic etching is carried out with the electrolyte temperature held at T_1 (°C.) and T_2 (°C.), the value Je of the current density is given by

$$Te=a\times Je+b$$

$$a=[(T_2-T_1)/(J_2-J_1)]\times(1\pm0.1)$$

$$b=[(T_1J_2-T_2J_1)/(J_2-J_1)]\times(1\pm0.1)\text{; and}$$

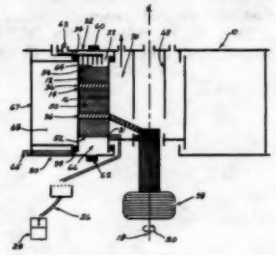
wherein the electrolytic etching is carried out until voltage between the metal layer and the electrode increases suddenly.

4,642,169

CONTINUOUS ROTATING ELECTROPHORESIS COLUMN AND PROCESS OF USING

Randall A. Yoshisato; Ravindra Datta, and Gregory R. Carmichael, all of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Continuation-in-part of Ser. No. 636,612, Aug. 1, 1984. This application Feb. 21, 1986, Ser. No. 833,654
Int. Cl.[4] G01N *27/26*
U.S. Cl. 204—180.1 16 Claims



16. A process for separating individual components from a feed stream of a multi-component chemical mixture in a separation apparatus including an annular chamber defined by sidewalls of an outer cylinder and an inner cylinder, said annular chamber having a first axial end disposed to receive a feed stream of a multi-component chemical mixture and a second axial end disposed to discharge separated components therefrom, a first electrode disposed at the first axial end of said annular chamber and a second electrode disposed at the second axial end of said annular chamber, a feed nozzle disposed at the first axial end, and means for rotating the annular chamber

with respect to the feed nozzle, said process including the steps of:

rotating said annular chamber with respect to said feed nozzle;

continuously feeding said chemical mixture through said feed nozzle into the first axial end of said chamber;

continuously applying an electrical potential between said first electrode and said second electrode thereby causing the separation of said chemical mixture into a number of individual separated components;

continuously forcing said separated components toward the second axial end of said annular chamber wherein each separated component flows through said chamber in a distinct helical path which terminates at a distinct angular section of said second axial end; and

continuously collecting each separated component at a predetermined distinct angular section of said second axial end.

4,642,170

ELECTROPHORETIC DEPOSITION OF SULFONE-CONTAINING POLYMERS

William M. Alvino, Penn Hills Township, Allegheny County, Pa.; Timothy J. Fuller, Berkeley Heights, N.J.; Louis A. Cargnel, Unity Township, Westmoreland County, and Luciano C. Scala, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1985, Ser. No. 765,464

Int. Cl.[4] C25D *13/06*

U.S. Cl. 204—181.4 **13 Claims**

1. A method of electrophoretically depositing a coating on a conductive substrate comprising:

(A) forming, in an organic solvent, an amine-free solution of a polymer selected from the group consisting of polysulfones, polyethersulfones, and mixtures thereof;

(B) forming an emulsion by combining said solution with an organic non-solvent for said polymer containing up to 0.6 pbw of an organic nitrogen-containing base per pbw of said polymer; and

(C) applying a direct current between said conductive substrate and said emulsion, whereby a coating of said polymer is deposited on said conductive substrate.

4,642,171

PHOTOTREATING APPARATUS

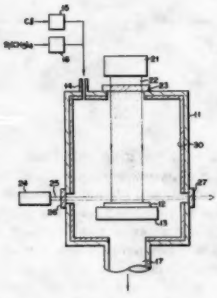
Makoto Sekine, Yokohama; Haruo Okano, and Yasuhiro Horiike, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 18, 1985, Ser. No. 756,318

Claims priority, application Japan, Sep. 18, 1984, 59-195163

Int. Cl.[4] C23C *15/00*

U.S. Cl. 204—298 **9 Claims**



1. A phototreating apparatus having a vacuum container for storing a solid material, means for introducing a photoreactive gas into said container, and a light source for supplying light having a predetermined wavelength to said container, causing a photoreaction of the photoreactive gas, said apparatus phototreating the solid material in the container by utilizing the photoreaction of the photoreactive gas, wherein at least an inner surface of said vacuum container comprises a light-absorbing material capable of absorbing the light having the predetermined wavelength.

4,642,172

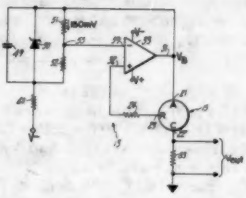
CONTROLLED-POTENTIAL BIAS CIRCUIT FOR ELECTROCHEMICAL CELLS

John M. Fruhwald, Pittsburgh, Pa., assignor to Bacharach, Inc., Pittsburgh, Pa.

Filed Feb. 19, 1985, Ser. No. 703,168

Int. Cl.[4] C25B *15/00;* **G01N** *27/46*

U.S. Cl. 204—231 **7 Claims**



1. A bias circuit for an electrochemical cell including anode, cathode and reference terminals, said bias circuit comprising an amplifier having an output electrically connected to the anode of the cell, a positive input connected to the reference terminal, and a negative input; and voltage setting means connected to the negative input of the amplifier for establishing a predetermined voltage difference, said voltage setting means being effective for establishing a voltage drop defined by the voltage difference between said output and said negative input of said amplifier, whereby the predetermined voltage difference is independent of the current variation between the anode and cathode terminals of the electochemical cell.

4,642,173

CELL HAVING COATED VALVE METAL ELECTRODE FOR ELECTROLYTIC GALVANIZING

Konrad Koziol, Röthenbach a.d. Pegnitz, and Erich Wenk, Nürnberg, both of Fed. Rep. of Germany, assignors to Conradty GmbH & Co. Metallelektroden KG, Rothenbach a.d. Pegnitz, Fed. Rep. of Germany

Filed May 20, 1985, Ser. No. 735,627

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421480

Int. Cl.[4] C25D *7/06;* **C25B** *11/02*

U.S. Cl. 204—242 **11 Claims**

1. In an apparatus for electrolyte deposition of metal from aqueous solution of a metal salt onto an elongated strip of metal as the strip is drawn longitudinally past a positively charged anode submerged in a bath of electrolyte solution, an anode structure, comprising:

at least one current feed,

at least one current distributor electrically conductively connected to said feed;

an active surface on said distributor which is directed towards the metal strip;

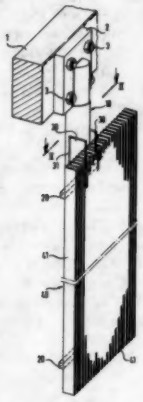
the active surface being oriented in comformity with the predetermined path of the metal strip;

the active surface being formed as lamellas of valve metal having an active surface coating;

the entire coated surface of the lamellas F_A and the surface F_P assumed by the overall arrangement of the lamellas (length times breadth of the electrode surface) having a surface factor such that $20 \geqq F_A/F_P \geqq 4$;

the larger portions of the coated surfaces of the lamellas being directed perpendicularly to the surface of the strip to be coated;

the current feed consisting of a rod having a core of highly electrically conductive metal and cladding of a valve metal;



the current distributor being formed from a rod of a valve metal; and

the current distributor being mechanically and electrically conductively connected to the current feed via at least one sheet-like connection element of a valve metal in such manner that the connection element is welded both to the cladding of the current feed and to the current distributor.

4,642,174

APPARATUS FOR DETERMINING THE OXYGEN CONTENT IN GASES

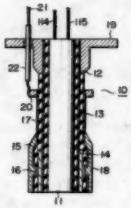
Masahiro Shibata, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 3, 1985, Ser. No. 751,729

Claims priority, application Japan, Jul. 6, 1984, 59-140016

Int. Cl.[4] G01N *27/56*

U.S. Cl. 204—408 **10 Claims**



1. An apparatus for determining the oxygen content in gases comprising:

a bar-like ceramic heater having an outer surface;

a porous first insulating layer which is formed on said outer surface of said ceramic heater by plasma flame spraying and permits the passage of oxygen molecules, said porous first insulating layer having an outer surface;

a first electrode formed on said outer surface of said first insulating layer, said first electrode having an outer surface;

a solid electrolyte film formed on said outer surface of said first electrode, said solid electrolyte film having an outer surface;

a second electrode formed on said outer surface of said solid electrolyte film, said second electrode having an outer surface;

a second insulating layer formed between said first and second electrodes to insulate said first and second electrodes from each other;

an oxygen diffusion-resistant layer formed on said outer surface of said second electrode to permit oxygen molecules to migrate to said second electrode; and

measuring means for applying a prescribed voltage between said first and second electrodes, and for measuring a current flowing therebetween in accordance with the application of said prescribed voltage.

4,642,175

PROCESS FOR UPGRADING HEAVY PETROLEUM FEEDSTOCK

Leslie R. Rudnick, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 606,498, May 3, 1984, abandoned. This application Mar. 19, 1985, Ser. No. 713,376

Int. Cl.[4] C10G *55/04*

U.S. Cl. 208—88 **8 Claims**

1. A method of reducing the coking tendency of a heavy hydrocarbon feedstock in a non-hydrogenative catalytic cracking process which comprises contacting the feedstock prior to catalytic cracking with a free radical removing catalyst comprising a transition metal naphthenate at a temperature below 350° C. for a time sufficient to reduce the free radical concentration of the feedstock whereby the coking tendency of the feedstock to the catalytic cracking process is reduced.

4,642,176

CATALYTIC DEWAXING PROCESS

Priscilla L. Adams, Langhorne, Pa., and Malvina Farcasiu, Flemington, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 9, 1985, Ser. No. 690,083

Int. Cl.[4] C10G *45/08, 47/20*

U.S. Cl. 208—111 **14 Claims**

9. A process of producing a hydrodewaxed feedstock of acceptable pour point specifications and oxidative stability specifications, as measured by ASTM D-943, comprising contacting a feedstock, containing wax components in unacceptable amounts and thiophenic sulfur containing components and boiling above about 550° F., with a catalyst comprising ZSM-5 and at least one element selected from the group consisting of elements of Group VIII and elements of Group VI in the presence of hydrogen at pressure, temperature and LHSV conditions effective to maintain hydrogenation of at least about 10% of said thiophenic sulfur containing components, whereby the resulting hydrodewaxed feedstock exhibits acceptable oxidative stability as measured by ASTM D-943 and whereby the necessity of hydrotreating conditions, subsequent to said hydrodewaxing, to achieve said oxidative stability, is eliminated.

4,642,177

PROCESS FOR REDUCING SULFUR OXIDE EMISSIONS FROM CATALYTIC CRACKING UNITS

Zoltan C. Mester, Laguna Niguel, and Edward J. Aitken, Brea, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Sep. 30, 1985, Ser. No. 781,755

Int. Cl.[4] C10G *11/00*; **C01B** *17/60*

U.S. Cl. 208—113 **25 Claims**

1. A catalytic cracking process which comprises circulating a bed of particulate cracking catalyst in combination with a sulfur sorbent through a cracking zone wherein said catalyst particles promote the conversion of a sulfur-containing hydro-

carbon feedstock to lower molecular weight products and then through a regeneration zone wherein coke deposited on the particles of said cracking catalyst is combusted off said particles at a temperature between about 1000° F. and about 1250° F., said sulfur sorbent comprising (1) a rare earth component or mixture of rare earth components, and (2) a cobalt component.

11. A catalytic cracking process which comprises circulating a bed of particulate cracking catalyst in combination with a sulfur sorbent through a cracking zone wherein said catalyst promotes the conversion of a sulfur-containing hydrocarbon feedstock to lower molecular weight products and then through a regeneration zone wherein coke deposited on the particles of said cracking catalyst is combusted off said particles, said sulfur sorbent comprising a mixture of rare earth components derived from bastnaesite by treating said bastnaesite to remove at least 50 weight percent fluorine, calculated as the element.

4,642,178

PROCESS FOR CONVERSION OF HYDROCARBONS

Jin S. Yoo, Flossmoor, and John A. Jaecker, Homewood, both of Ill., assignors to Katalistiks, Inc., Baltimore, Md.

Continuation of Ser. No. 494,604, May 16, 1983, Pat. No. 4,495,304, which is a continuation-in-part of Ser. No. 301,678, Sep. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 173,315, Jul. 29, 1980, abandoned. This application Jan. 16, 1985, Ser. No. 692,448

Int. Cl.[4] C10G *11/05*; B01J *8/00*; C01B *17/00, 17/74*

U.S. Cl. 208—113 33 Claims

18. In a hydrocarbon conversion process for converting a sulfur-containing hydrocarbon feedstock which comprises (1) contacting said feedstock with solid particles capable of promoting the conversion of said feedstock at hydrocarbon conversion conditions in at least one reaction zone to produce at least one hydrocarbon product and to cause deactivating sulfur-containing carbonaceous material to be formed on said solid particles thereby forming deposit-containing particles; (2) contacting said deposit-containing particles with an oxygen-containing vaporous medium at conditions to combust at least a portion of said carbonaceous deposit material in at least one regeneration zone to thereby regenerate at least a portion of the hydrocarbon conversion catalytic activity of said solid particles and to form a regeneration zone flue gas containing sulfur trioxide; and (3) repeating steps (1) and (2) periodically, the improvement which comprises, using, in intimate admixture with said solid particles, a minor amount of discrete entities having a composition different from said solid particles and comprising a major amount of at least one metal-containing spinel including a first metal and at least two different second metals having valences higher than the valence of said first metal, one of said second metals being aluminum and the other of said second metals being trivalent and selected from the group consisting of iron, chromium, vanadium, manganese, gallium, boron, cobalt and mixtures thereof, the atomic ratio of said first metal to said second metals in said spinel is at least about 0.17, said discrete entities being present in an amount sufficient to reduce the amount of sulfur oxides in said flue gas.

4,642,179

CATALYST FOR REMOVING SULFUR AND METAL CONTAMINANTS FROM HEAVY CRUDES AND RESIDUES

Alfredo L. Morales; Roberto Galiasso, both of San Antonio de Los Altos; Angel R. Carrasquel, and Jose A. Salazar, both of Los Teques, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Division of Ser. No. 724,969, Apr. 19, 1985, Pat. No. 4,588,709, Continuation-in-part of Ser. No. 563,197, Dec. 19, 1983, Pat. No. 4,520,128. This application Feb. 28, 1986, Ser. No. 834,587

Int. Cl.[4] C10G *45/04, 45/00, 17/00*

U.S. Cl. 208—217 2 Claims

1. A process for the hydrotreatment of a heavy hydrocarbon feedstock containing high levels of nickel and vanadium contaminants, sulfur and asphaltenes comprising the steps of: contacting said heavy hydrocarbon feedstock with a catalyst characterized by simulteneous demetallizing and desulfurizing activity wherein the ratio of percent of demetallizing to desulfurizing approaches unity over a useful life in excess of 80 days in a reactor at a temperature varying between 300° and 450° C., a pressure varying between 600 and 3500 psig, a linear hourly space velocity varying from 0.05 to 5 $(hours)^{-1}$, a H_2:feed ratio ranging from 300 to 20,000 SCF/bbl and a partial hydrogen pressure of from 500 to 3000 psig; said catalyst comprising an alumina support material impregnated with a first compound consisting essentially of a metallic compound whose metallic compound is selected from Group VIB of the Periodic Table, disposed on said alumina support material so as to comprise from 5 to 30% of the catalyst by weight, calculated as an oxide and a second compound consisting essentially of a metallic compound whose metallic component is selected from Group VIII of the Periodic Table, disposed on said support material so as to comprise from 0.1 to 8% of the catalyst by weight, calculated as an oxide; a total pore volume ranging from between 0.50 to 1.20 ml/g; an average pore diameter of about between 200 to 300 Å and signal band strength ratios, as determined by x-ray photoelectron spectroscopy, as follows: I(Me VIb)/I(refractory metal) is between 5 and 8 and I(Me VIII)/I(refractory metal) is between 1 and 5.

4,642,180

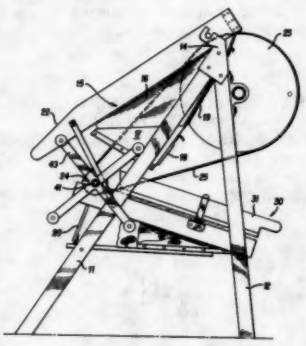
PORTABLE APPARATUS FOR THE RECOVERY OF PLACER GOLD

Norman H. Kaufman, P.O. Box 12663, Las Vegas, Nev. 89112

Filed May 28, 1985, Ser. No. 738,234

Int. Cl.[4] B07B *4/08, 9/00*

U.S. Cl. 209—44 9 Claims



1. A portable separation apparatus to separate a heavy metal from a metal-containing ore, comprising:

(a) a support frame including two pair of support legs converging at an uppermost end portion and diverging at a lowermost end portion, each pair of said support legs connected together at the uppermost end portion by a connection element;

(b) a screen provided with a screen frame, a first end of the screen frame directly and detachably engaged with said connection elements, a second end of the screen frame supported on one of said each pair of support legs in a region intermediate said uppermost and lowermost end portions, said screen frame provided so as to receive and reject large particles of the ore and pass smaller ore particles through said screen;

(c) a waste discharge chute integral with said screen frame;

(d) a hopper means detachably connected to said screen frame for receiving said smaller ore particles therein;

(e) discharge operating means connected to said hopper means for releasing said smaller ore particles from said hopper means;

(f) a riffle board positioned below said hopper to receive said smaller ore particles from said hopper means, said riffle board provided with a plurality of riffles and a plurality of troughs defined between said riffles;

(g) a bellows for expelling air being positioned so as to deliver said air through said troughs so as to separate and carry off light-weight debris while permitting heavier particles to remain in the troughs of the riffle board; and

(h) means for operating said bellows independent of said discharge operating means.

4,642,181

INCREASED REDUCTION OF MAGNESIUM CONTENT BY USE OF INORGANIC PROMOTERS DURING BENEFICIATION OF PHOSPHATE ORES BY FLOTATION

Samuel M. Polinsky; Larry W. Bierman, and David A. Hempel, all of Pocatello, Id., assignors to J. R. Simplot Co., Pocatello, Id.

Continuation of Ser. No. 440,454, Nov. 10, 1982, abandoned. This application Feb. 28, 1985, Ser. No. 707,168

Int. Cl.[4] B03D *1/14*

U.S. Cl. 209—167 **2 Claims**

1. A process for beneficiating a water slurry of phosphate-containing ore having carbonate, magnesium, and silicate impurities therein, the ore having first been prepared by comminuting and sizing, comprising the steps of:

adding sodium carbonate and ammonium hydroxide to the slurry;

adding a fatty acid and fluosilicic acid to the slurry, after the sodium carbonate and ammonium hydroxide are added;

adding a frothing agent to the slurry;

separating the carbonates and magnesium in the froth of a flotation cell;

adding an amine to the carbonate-depleted slurry; and

separating the silica components in the froth of a flotation cell to produce a slurry concentrate, whereby the unfloated portion of the slurry concentrate contains an enhanced phosphate content and substantially reduced magnesium, carbonate, and silicate content.

4,642,182

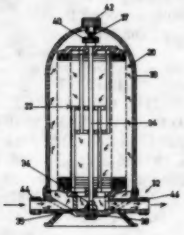
MULTIPLE-DISC TYPE FILTER WITH EXTENSIBLE SUPPORT

Mordeki Drori, 89 Zahal Street, Kiron, Israel

Filed Mar. 7, 1985, Ser. No. 709,376

Int. Cl.[4] B01D *29/46*

U.S. Cl. 210—232 **14 Claims**



1. A multiple-disk type filter comprising:

a housing;

a stack of filter disks disposed ins aid housing; and

an extensible support for said stack of filter disks, including first, second, third and fourth base elements and a multiplicity of rod members joining the first and second base elements in sliding relationship, a first plurality of the rod members being fixedly attached ot the first base element and being arranged for slidable supporting engagement with the second base element and a second plurality of rod members being fixedly attached to the second base element and being arranged for slidable supporting engagement with the first base element,

said third base element being attached to said first plurality of rod members;

said fourth base element being attached to said second plurality of rod members;

said first and second base elements defining interior base elements and being located interiorly of said filter disks at an intermediate location along said stack;

said third and fourth base elements defining exterior base elements and being located exteriorly of said stack; and

said first and second pluralities of rod members being located interiorly of said stack of filter disks.

4,642,183

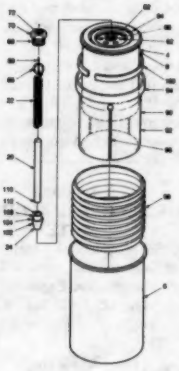
OIL FILTER

Alfred M. Hebert, P.O. Box 706, Pleasant Valley, N.Y. 12569

Filed Mar. 21, 1986, Ser. No. 841,038

Int. Cl.[4] B01D *27/00*

U.S. Cl. 210—232 **3 Claims**



1. In an oil filter cartridge having a central internally threaded receptacle for connection to a corresponding externally threaded conduit on an engine for return of filtered oil circulated through said filter and an annular gasket defining a pathway for oil from said engine to said filter, the improvement therein whereby said central threaded receptacle has removeably threaded thereto an adaptor collar with external threads matched those of said receptacle and internal threads corresponding with the threads of said externally threaded conduit of the engine to which said cartridge is to be connected whereby varying the thickness of said collar allows said cartridge to be used in different engines and wherein a decorative outer cylindrical cover is removeably secured to the outer walls of said cartridge by means of a magnetized generally cylindrically shaped sleeve, dimensioned to resiliently slide over the outer cartridge walls, said sleeve having upper walls of a larger diameter to match those of the decorative cover, and resilient spacer means between the lower walls of said sleeve and the walls of said decorative cover.

4,642,184

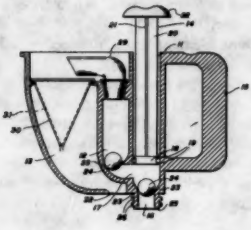
FRYER FILTER AND PUMP

Donald E. Liepse, Rte. #3, Mexico, Mo. 65265

Filed Mar. 6, 1985, Ser. No. 708,705

Int. Cl.[4] B01D *35/26*

U.S. Cl. 210—240 **4 Claims**



1. A hand held device for removing particles formed in deep fat frying of foodstuffs from liquefied grease contained in a fryer comprises a three-chambered unit with a handle, the chambers being a receiving chamber, a transfer chamber and a filter chamber having a filter, an inlet port with a ball check valve communicating the liquefied grease in the fryer with the receiving chamber and an outlet port with a ball check valve communicating the receiving chamber with the transfer chamber, said ball check valves weighted and positioned such that they are normally closed in upright condition and normally open when the device is inverted, a piston pumping means in the receiving chamber for sucking liquefied grease from the fryer into the receiving chamber and forcing it into the transfer chamber, the transfer chamber including means for directing the flow of the liquefied grease and the particles suspended therein onto the filter, and an opening in the filter chamber for return of the liquefied grease filtrate to the fryer, said means for directing the flow of liquefied grease and the particles suspended therein onto the filter includes a removable tube whereby the flow of liquefied grease by-passes the filter.

4,642,185

DEVICE FOR RECOVERING OIL FLOATING ON WATER

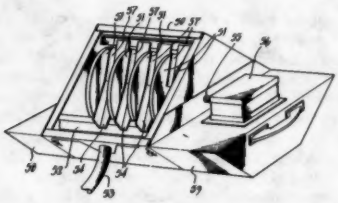
John T. Turner, Stockport, and Marios Christodoulou, Manchester, both of England, assignors to The Victoria University of Manchester, Manchester, England

Filed Mar. 21, 1985, Ser. No. 714,217

Claims priority, application United Kingdom, Mar. 29, 1984, 8408164

Int. Cl.[4] B01D *33/22*

U.S. Cl. 210—242.3 **13 Claims**



1. A device for recovering oil floating on the surface of water comprising a framework, at least one disc rotatably mounted on the framework, means for rotating the discs, the framework being supported on floats so that when the device is placed on water it floats with the or each disc partially immersed in the water, the or each disc being associated with a scraper for removing liquid adhering to the disc during rotation thereof, the device being characterized in that said disc comprises a circular plate having at least one generally concentric axially projecting arcuate member on at least one face of the plate, and wherein said arcuate member presents at least one inwardly directed surface.

4,642,186

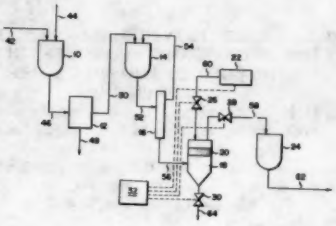
CLARIFYING APPARATUS

Yoshiaki Nakamura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 2, 1984, Ser. No. 576,430

Int. Cl.[4] C02F *9/00*; **G21F** *9/04*

U.S. Cl. 210—257.1 **6 Claims**



1. A clarifying apparatus for removing insoluble radioactive particles from a solution containing the particles, said clarifying apparatus comprising:

(a) a centrifugal clarifier for centrifugally separating the radioactive particles from the solution;

(b) filter means having a filter with a secondary clarified liquid outlet side for removing particles each having a size of not more than a critical particle size of the radioactive particles which can be separated by said centrifugal clarifier;

(c) supplying means for supplying the solution to said centrifugal clarifier;

(d) a buffer tank which receives the primary clarified liquid from said centrifugal clarifier;

(e) a feed tank for receiving the primary clarified liquid from said buffer tank and feeding the primary clarified liquid to said filter means at a predetermined flow rate;

(f) means for feeding an overflow portion of the primary clarified liquid from said feed tank back to said buffer tank;

(g) a compressed air supplying means for supplying compressed air to the secondary clarifying liquid outlet side of said filter in a pulsated manner; and

(h) control means for supplying the compressed air to said filter in the pulsated manner when the primary clarified liquid is not being supplied to said filter means, thereby removing sludge from said filter.

4,642,187

SYSTEMS FOR THE TREATMENT OF ORGANIC MATERIAL AND PARTICULARLY SEWAGE SLUDGE

Keith A. Schimel, 220 Glen Echo Dr., Norfolk, Va. 23805

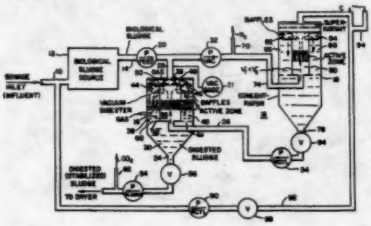
Division of Ser. No. 199,896, Oct. 23, 1980, Pat. No. 4,375,412, which is a continuation-in-part of Ser. No. 3,167, Jan. 15, 1979, abandoned. This application Jan. 6, 1982, Ser. No. 337,545

Int. Cl.[4] C02F *11/04*

U.S. Cl. 210—258 **3 Claims**

1. Apparatus for the anaerobic digestion of slurries of organic material such as sewage sludge comprising a vacuum digester tank, a concentrator tank, a feed line for feeding said sludge to one end of said digester tank and into a region between the ends of said concentrator tank, another feed line for feeding concentrated and partially digested sludge from one end of said concentrator tank to a region between the ends of said digester tank, means in both said tanks for maintaining submerged suspensions of said material therein, means for

repetitively cycling the pressure in said digester tank between sub-atmospheric pressure and pressure at or above atmospheric pressure, and means for withdrawing a stable portion of said



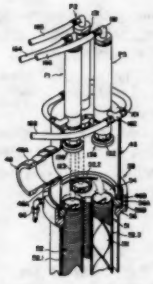
sludge which is substnatially mineralized to 80% or more together with ammonia gas from an end of said tank opposite to said one end thereof.

4,642,188

BACKWASH APPARATUS FOR MULTI ELEMENT FILTER UNIT

Richard B. DeVisser, Schoolcraft, and Sydney Hagerty, Union, both of Mich., assignors to Dover Corporation, Portage, Mich.

Filed May 29, 1985, Ser. No. 738,937
Int. Cl.[4] B01D *27/12, 29/38*
U.S. Cl. 210—333.1 10 Claims



1. A multielement filter unit including a backwash apparatus, comprising:

a filter casing; means for flowing process liquid in one direction through the casing and alternately flowing backwash liquid in the opposite direction through said casing;

a plurality of filter tubes close spaced within said filter casing and having one end open to expel filtered process liquid and alternately receive backwash liquid;

flange means engaging said filter tubes adjacent their open ends and dividing said filter casing into first and second chambers with said open ends of said filter tubes opening through said flange means into said second chamber;

means designed for minimizing installation and operating expense factors in a compact liquid filter in a compact liquid filter unit having plural filter tubes closely spaced within a single compact casing, for providing improved backwash cleaning and for substantially reducing the tendency toward solids buildup over multiple filtration-backwash cycles, including:

(a) a plurality of closure means each shiftable from a first location spaced during filtration from said open end of a corresponding said filter tube for allowing unimpeded filtration flow through said corresponding filter tube to a second location closing said corresponding filter tube against flow therethrough;

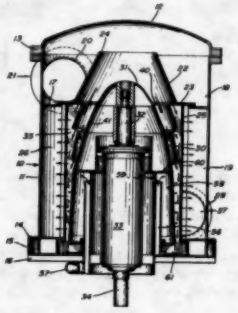
(b) means actuable in the backwash mode of the apparatus for causing some of said closure means to close the opposed open ends of corresponding ones of said filter tubes while leaving the end of at least one of said filter tubes open by leaving the corresponding closure means spaced therefrom, said filter tubes being sequentially actuable during backwashing such that each of the filter tubes has its one end open for at least a part of the backwashing time while the one ends of others of the filter tubes are closed by actuation of their corresponding closure means.

4,642,189

ROTARY SCREEN OF THE VERTICAL PRESSURE TYPE HAVING PULP STOCK FEED AT DIFFERENT AXIAL POSITIONS ON THE SCREEN

Anthony W. Hooper, Quebec, Canada, assignor to Uniweld Inc., Sherbrooke, Canada

Continuation of Ser. No. 560,248, Dec. 12, 1983, abandoned.
This application Feb. 20, 1985, Ser. No. 703,451
Int. Cl.[4] B01D *29/42;* B07B *1/20*
U.S. Cl. 210—405 17 Claims



1. In a rotary pulp screening device of the vertical pressure type, including a cylindrical housing having means defining an upper inlet chamber and a lower screening chamber with a disc ring dividing the upper chamber from the lower chamber,

vertical cylindrical screen within the lower chamber,

rotary impeller mounted for rotation about a central vertical axis within the screen, the impeller having a body whose top is adjacent to the disc ring and bottom is adjacent the lower end of the cylindrical screen, the body having a shape with a circular axial cross section from the top to the bottom, whose diameter increases from the top to the bottom, thus leaving a larger annular space at the top, and means defining an annular inlet between the disc ring and the top of the body,

means for rotating the impeller,

impeller blades radiating from at least a portion of the body of the impeller and extending to within a short distance from the screen for the height of the screen, and

means defining a pulp discharge outlet from the lower chamber outside the pulp screen,

the improvement comprising:

at least one substantially frusto-conical shaped baffle with the upper and lower edges of said baffle being disposed in parallel planes, said baffle being disposed in the annular space between the body of the impeller and the screen and extending down from the annular inlet, said baffle being joined to the impeller blades and having a shape to conform to the shape of the body of the impeller to define an annular axial cross sectional opening between the baffle and the body of the impeller with the opening having a substantially equal horizontal cross sectional area from the

top of the baffle to the bottom of the baffle, said baffle forming means dividing the flow of pulp stock entering the annular inlet so that a portion of the pulp stock entering the annular inlet passes across the exterior surface of the baffle and a portion of the pulp stock entering the annular inlet passes between the baffle and the body of the impeller and whereby the substantially equal horizontal cross sectional area from the top to the bottom of the baffle maintains a substantially constant axial velocity of the pulp stock passing between the baffle and the body of the impeller.

4,642,190

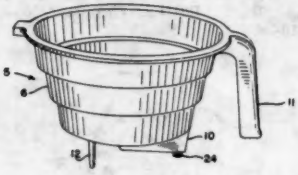
BREWING FUNNEL WITH SCREEN FILTER ASSEMBLY

John D. Zimmerman, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Feb. 1, 1985, Ser. No. 697,455

Int. Cl.[4] B01D *23/28*

U.S. Cl. 210—464 **4 Claims**



1. In combination with a beverage brewing funnel having on its bottom a plurality of generally radially extending upstanding internal ribs serving to maintain the bottom of a paper filter seated within said funnel in spaced relation with the inner surface of said funnel bottom and said funnel bottom having a generally radially extending drainage sump with a drainage opening means therein through which brewed and filtered beverage drains from said funnel, a screen filter assemLly comprising:

a bushing having an intermediate portion seated in said drainage opening means, having a first externally threaded nipple portion projecting upwardly into said drainage sump and having a second externally threaded nipple portion protruding below said drainage sump;

a first nut screwed onto said first nipple portion;

a generally cylindrical screen filter having a closed upper end with its bottom end secured to said first nut; and

a second nut screwed onto said second nipple portion and drawing said bushing into said seated relationship with said drainage opening means.

4,642,191

MULTI-ZONE FLOW CONTROL METHOD AND APPARATUS

Robert C. Hill, Santa Clara, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 357,373, Mar. 12, 1982, abandoned. This application Nov. 9, 1983, Ser. No. 550,051

Int. Cl.[4] B01D *21/24*

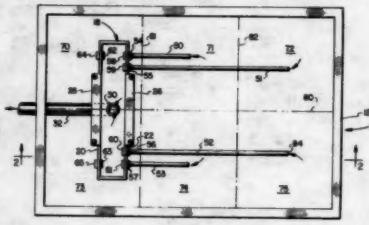
U.S. Cl. 210—532.1 **7 Claims**

1. Apparatus for controlling fluid flow comprising:

(a) a fluid-filled vessel adapted to receive a continuous fluid supply;

(b) a plurality of open-ended cylindrical fluid conduits for collecting fluid from said vessel, the inlet ends of said conduits being submerged within the body of fluid in said vessel at a like plurality of spaced-apart locations, each defining a vertically-extending fluid zone of said vessel, within which all fluid will flow into a respective one of said inlet ends, said fluid zones together constituting said fluid body;

(c) a separate fluid collection container supported within said vessel;



(d) means for fixedly interconnecting the outlet ends of said conduits with said container through separate orifices, said orifices being maintained at a common elevation below the fluid level in said vessel; and

(e) means for continuously draining said container.

4,642,192

METHOD OF TREATING FLUIDS

Don E. Heskett, P.O. Box 243, Constantine, Mich. 49042

Continuation of Ser. No. 605,652, Apr. 30, 1984. This application May 5, 1986, Ser. No. 859,610

Int. Cl.[4] C02F *1/28, 1/44, 1/70, 1/72*

U.S. Cl. 210—638 **11 Claims**

1. A method of reducing the concentration of undesirable inorganic chlorine which is present in drinkable water, said undesirable inorganic chlorine having a first redox potential, said method comprising passing said water containing said chlorine through a bed of metal particles, said metal particles comprising copper, said particles having a second redox potential such that relative to said first redox potential conditions are established for spontaneous inorganic oxidation and reduction reactions between said chlorine and said metal particles when said water is in contact with said metal particles.

4,642,193

METHOD FOR PURIFICATION OF THE COOLING WATER USED IN NUCLEAR REACTORS

Shigeo Miyata; Noriko Iizima, both of Takamatsu, and Tadashi Manabe, Kagawa, all of Japan, assignors to Kyowa Chemical Industry Co. Ltd., Tokyo, Japan

Filed Jan. 25, 1985, Ser. No. 694,749

Claims priority, application Japan, Jan. 30, 1984, 59-13389

Int. Cl.[4] C02F *1/42*

U.S. Cl. 210—682 **9 Claims**

1. A method of purifying cooling water used in nuclear reactors and containing at least one of cationic and anionic impurities, which comprises contacting said cooling water with a hydrotalcite compound of the following formula

$$M_{1-x}^{2+}M_x^{3+}(OH)_2A_{x/n}^{n-}.mH_2O \quad (I)$$

wherein M^{2+} represents a divalent metal cation, M^{3+} represents a trivalent metal cation, A^{n-} represents an anion having a valence of n, and x and m satisfy the following expressions

$$0<x<0.5$$

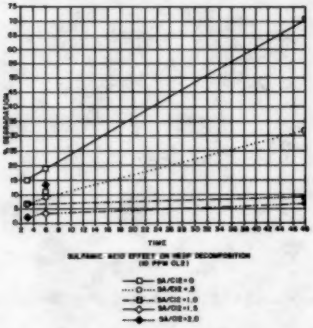
$$0\leq m<1$$

or a calcined product thereof obtained by calcination at a temperature of up to about 900° C.

4,642,194
METHOD FOR PREVENTION OF PHOSPHONATE DECOMPOSITION BY CHLORINE

Donald A. Johnson, Naperville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Sep. 16, 1985, Ser. No. 776,551
Int. Cl.⁴ C02F 5/14
U.S. Cl. 210—699 **4 Claims**



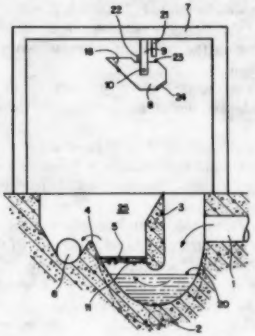
1. A method of preventing the decomposition of phosphonates from the group consisting of:
1,1-hydroxyethylidene diphosphonic acid;
tris aminomethane phosphonic acid;
1-phosphono glycolic acid;
ethylene diamine tetra(methylenephosphonic acid):
Hexamethylene diamine tetra(methylenephosphonic acid); and,
diethylene triamine penta(methylenephosphonic acid); which are present in an effective amount to prevent scale in industrial cooling waters which contain an effective amount of chlorine for microbiological control which comprises treating said waters with at least ¼ ppm of sulfamic acid for each ppm of Cl_2 present in these waters.

4,642,195
SCREENING SYSTEM INCLUDING A SCREEN CLEANING MEANS FOR AND A METHOD OF CLEANING A SCREEN IN A WASTE WATER PURIFICATION PLANT

Walter Nill, Rud. Diesel-Strasse 2, 8404 Winterthur, Switzerland

Continuation of Ser. No. 624,773, Jun. 26, 1984, abandoned, which is a continuation of Ser. No. 392,014, Jun. 25, 1982, abandoned. This application Jun. 16, 1986, Ser. No. 874,400
Claims priority, application Switzerland, Jul. 1, 1981, 4346/81
Int. Cl.⁴ B01D 23/02
U.S. Cl. 210—798 **16 Claims**

1. An apparatus for screening solid debris from the waste water of a waste water purification plant, comprising:
(a) means defining a waste water flow path including a waste water inlet and a filtered water discharge outlet;
(b) screen means having an outlet side and arranged in said flow path between said waste water inlet and said filtered water discharge outlet for screening solid debris from the waste water flow;
(c) framing means extending around said screen means and located substantially at said outlet side of said screen means relative to the flow of the waste water in order to positively guide a surge of high impact velocity cleaning fluid against and through said screen means when said screen means has at least said outlet side thereof freely exposed and to build-up a static pressure head of said high impact velocity cleaning fluid directed against the screen means for cleaning said screen means of the solid debris;
(d) back-flush means for directing the high impact velocity cleaning fluid in a free fall against the outlet side of said screen means to periodically remove debris therefrom, including:



container means supported at an elevation at a given distance above said screen means for receiving a given volume of said cleaning fluid, said container means being operable between fluid storing and fluid discharging positions.

4,642,196
METHOD FOR CONTROLLING DUST AND SPONTANEOUS COMBUSTION IN THE DRYING, HANDLING, TRANSPORTING AND STORING OF COAL

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 594,581, Mar. 29, 1984, abandoned. This application Aug. 1, 1985, Ser. No. 761,446
Int. Cl.⁴ C09K 3/12
U.S. Cl. 252—88 **12 Claims**

1. A method of controlling dust formation and spontaneous combustion in drying, handling, transporting, and storing of low rank coal selected from the group consisting of lignite, peat, and subbituminous coal containing about 20–50% water comprising:
applying to said coal a dust inhibiting amount of an aqueous solution consisting essentially of gelatinized starch at a temperature of from about 60° C. to about 200° C. by spraying said solution over said coal.

4,642,197
PROCESS FOR THE PRODUCTION OF A WASHING ADDITIVE IN TABLET FORM

Hans Kruse, Korschenbroich; Klaus Koester, Langenfeld; Franz-Josef Carduck, Haan; Heinz-Manfred Wilsberg, Cologne, and Rolf Puchta, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 13, 1985, Ser. No. 733,669
Claims priority, application Fed. Rep. of Germany, May 14, 1984, 3417820
Int. Cl.⁴ C11D 17/00
U.S. Cl. 252—98 **15 Claims**

1. A process for the production of a washion additive in tablet form containing on a weight basis of said tablet (1) 2 to 30% of at least one activator for per compounds (2) 2 to 30% of at least one nonionic surface-active compound, (3) 0.5 to 20% of at least one surface-active nitrogen-containing compound selected from the group consisting of quaternary ammonium compounds, fatty amine compounds, aminopropionic acid compounds, and mixtures thereof, (4) 0 to 5% of at least one water-solubie salt of an alkane polyphosphonic acid, and

(5) 0 to 5% of at least one foam regulator, as wash-active ingredients, comprising the steps of:

A. granulating component (1) while simultaneously mixing therewith components (2) and (3) as well as components (4) and (5) if present, together with tabletting aids;

B. powdering the resulting granulate with a powder-form adsorbent;

C. spraying the powdered granulate with a liquid binder, said liquid binder being a solution of cane sugar or sorbitol;

D. drying the granulate to a water content of not more than 6% by weight to form a free-flowing granulate;

E. mixing the dried granulate with at least one tablet disintegrating agent; and

F. compressing the granulate into tablets of more than 30 mm in diameter and having a depth of 0.75 to 1.1 times their diameter but said depth being at least 25 mm, a density of from 0.8 to 1.2 g/cm^3, a weight of from 15 to 50g, and a breaking strength of from 6 to 12 kg, whereby the tablets contain sufficient detergency-boosting ingredients for one load of washing.

4,642,198

LIQUID BLEACHING COMPOSITIONS

Robert W. Humphreys, Pennsauken, N.J.; Adrian W. Walker, Irby, United Kingdom; Robin J. Green, Voorschoten, and Stephen W. Russell, Maassluis, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 26, 1985, Ser. No. 727,494

Claims priority, application United Kingdom, May 1, 1984, 8411161; Dec. 18, 1984, 8431873

Int. Cl.^{4} C11D *3/395*

U.S. Cl. 252—94 **13 Claims**

1. An aqueous liquid bleaching composition having a pH of from 1 to 6.5, comprising from 1 to 40% by weight of a solid, particulate, substantially water-insoluble organic peroxy acid stably suspended in a surfactant structured liquid comprising from 2 to 50% by weight of a surfactant, from 1.5 to 30% by weight of an electrolyte and the balance water, said bleaching composition having a viscosity of from 0.05 to 20 PaS measured at a shear rate of 21 sec.$^{-1}$ at 25° C.

4,642,199

NOVEL LIQUID CRYSTAL COMPOUNDS AND LIQUID CRYSTAL COMPOSITIONS CONTAINING SAME

Shigeru Sugimori, Fujisawashi, and Kazunori Nigorikawa, Yokohamashi, both of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 13, 1985, Ser. No. 744,417

Claims priority, application Japan, Jun. 13, 1984, 59-121570; Aug. 9, 1984, 59-166762

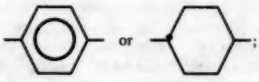
Int. Cl.^{4} C09K *19/34;* **G02F** *1/13;* **C07D** *213/65*

U.S. Cl. 252—299.61 **6 Claims**

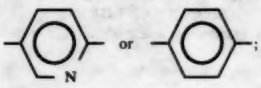
1. A pyridine derivative expressed by the formula

$$R—X—COO—Y—CH_2CH_2—Z—A \qquad (I)$$

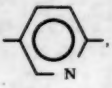
wherein R represents an alkyl group or an alkoxy group each of 1～10 carbon atoms; X represents



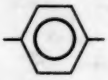
Y represents



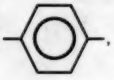
when Y is



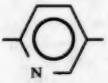
Z represents



and A represents F, Cl or a cyano group; and when Y is



Z represents



and A represents an alkyl group or an alkoxy group each of 1～10 carbon atoms.

4,642,200

STAIN-RESISTANT ANTIMONY ORGANIC SULFUR-CONTAINING COMPOUNDS AND VINYL HALIDE RESINS CONTAINING SAME

Ronald G. Hale, Wichita, Kans.; Thomas R. Woodley, Painesville, and Paul K. Tornstrom, Euclid, both of Ohio, assignors to Plastic Specialties and Technologies, Inc., Cleveland, Ohio

Filed Jun. 3, 1985, Ser. No. 740,513

Int. Cl.^{4} C09K *15/32*

U.S. Cl. 252—400.54 **23 Claims**

1. A stain-resistant antimony organic sulfur-containing composition consisting essentially of;

an antimony organic sulfur-containing compound having the formula:

$$R_nSbX_{3-n}$$

here R of the formula is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, cycloalkyl, cycloalkenyl, mixed aryl-alkyl, and substituted groups thereof, where X of the formula is selected from the group consisting of sulfur, SR and SRCOOR', where R of the group SR is selected from alkyl, aryl, mixed aryl-alkyl, and substituted groups thereof, where R of the group SRCOOR' is selected from alkylene, arylene, aralkylene, and substituted groups thereof, wherein R' of the group SRCOOR' is selected from alkyl, aryl, mixed aryl-alkyl, and substituted groups thereof, where n is an integer of 0 to 2, and

as an anti-staining additive therefor in an effective amount a

1-hydroxy-4[(4-methylphenyl)amino]-9,10-anthracenedione with said antimony compound.

22. A stain-resistant liquid antimony composition which is shelf-stable at room conditions for at least several weeks consisting essentially of

a normally liquid antimony organic sulfur-containing compound selected from the group consisting of antimony tris(isooctylthioglycolate), antimony tris(isooctylmercaptopropionate), dodecylmercaptoantimony bis(isooctylthioglycolate), antimony tris(glycoldimercaptoacetate), and mixtures thereof,

as an anti-staining additive therefor in an effective amount 1-hydroxy-4-[(4-methylphenyl)amino]-9,10-anthracenedione, and

t-butyl catechol.

4,642,201

COMPOSITIONS FOR IMPROVING THE STABILITY OF INTERCALATED GRAPHITE STRUCTURAL MEMBERS

Ferdinand L. Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Filed Aug. 27, 1985, Ser. No. 770,158
Int. Cl.[4] H01B *1/04*
U.S. Cl. 252—503 **14 Claims**

1. A powder for forming an environmentally stable member, comprising:

a metal halide intercalated graphite; and

a metal selected from the group consisting of copper, nickel, silver, molybdenum and tungsten; wherein said metal comprises from about 2 volume percent to about 30 volume percent of said environmentally stable powder.

4,642,202

CONDUCTIVE (HARD) RUBBER COMPOSITIONS

Henry E. Railsback, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 403,211, Jul. 29, 1982, Pat. No. 4,545,927. This application Feb. 14, 1985, Ser. No. 702,093
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—511 **22 Claims**

1. A process for preparing a cured conductive rubber exhibiting an electrical resistivity of less than about 10^6 Ohm cm, where comprises:

(A) blending (a) a dispersing component which is a thermoplastic polymer and a conducting amount of (b) at least one conductor selected from the group consisting of (b-1) conductive carbon blacks, (b-2) metal powders or particles, and (b-3) mixtures, thereby preparing a Masterbatch (A), wherein said Masterbatch (A) contains in the range of about 10 to 80 weight (b);

(B) blending said Masterbatch (A) with (c) at least one elastomer in a proportion effective to provide low resistivity to said elastomer, wherein said effective proportion is about 1.1:1 to 5:1 Masterbatch (A):(c), thereby preparing a conductive rubber compound;

(C) molding said conductive rubber compound, and

(D) curing said conductive rubber compound.

4,642,203

METHOD OF TREATING LOW-LEVEL RADIOACTIVE WASTE

Ichiro Matsunaga, Tokyo, and Hiroshi Sugai, Ibaragai, both of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,087
Claims priority, application Japan, Jun. 15, 1983, 58/107409
Int. Cl.[4] G21F *9/04, 9/12*; C02F *1/42, 1/70*
U.S. Cl. 252—631 **3 Claims**

1. A method of reducing the radioactive concentration of low-level radioactive waste which comprises the steps of

(1) providing an iron hydroxide-cation exchange resin which has been obtained by treating a strongly acid cation exchange resin with ferric chloride and aqueous ammonia to form a product of hydrolysis of ferric ions in said resin,

(2) adding hydrazine to said low-level radioactive waste in an amount of at least 100 mg hydrazine per liter of low-level radioactive waste to form a mixture,

(3) adjusting the pH and the temperature of said mixture such that its pH is at least 7 and its temperature is between 50° C. and 60° C., and

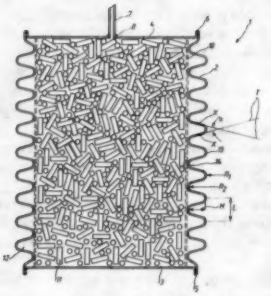
(4) passing said mixture through said iron hydroxide-cation exchange resin provided in step (1).

4,642,204

METHOD OF CONTAINING RADIOACTIVE OR OTHER DANGEROUS WASTE MATERIAL AND A CONTAINER FOR SUCH WASTE MATERIAL

Martin Burström, Robertsfors, and Ragnar Tegman, Umeå, all of Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Jan. 23, 1984, Ser. No. 573,160
Claims priority, application Sweden, Jan. 26, 1983, 8300387
Int. Cl.[4] G21F *9/36, 9/16*
U.S. Cl. 252—633 **14 Claims**



1. In a method of containing radioactive waste material in a gas-tight container and of converting the material contained within the container into a coherent dense body by isostatic compaction at a temperature necessary for bonding, which method comprises placing the radioactive waste material into a metal container, with a corrugated bellows-like cylindrical outer wall, evacuating the container, closing the container, and isostatically compressing the container,

the improvement whereby

a barrier means, impermeable to the radioactive waste material, is located inside the outer wall of the container and the radioactive waste material is placed inside said barrier means, said barrier means and said outer wall defining an empty, material-free space, thereby allowing the corrugated bellows-like cylindrical outer wall to be folded without interference during axial collapse of the container during said isostatic compression, and said barrier means comprising at least one circumferential layer of wire netting with wires extending around said barrier means, and means preventing the radioactive waste material from passing through said layer of wire netting.

4,642,205

DIASTEREOMER SALTS OF PHENYLALANINE AND N-ACYL DERIVATIVES THEREOF AND PROCESS FOR THE SEPARATION OF OPTICALLY ACTIVE PHENYLALANINE AND N-ACYL DERIVATIVES THEREOF

Maria Acs; Ferenc Faigl, and Elemer Fogassy, all of Budapest, Hungary, assignors to Alkaloida Vegyészeti Gyár, Postafiok, Hungary

PCT No. PCT/HU85/00012, § 371 Date Nov. 18, 1985, § 102(e) Date Nov. 18, 1985, PCT Pub. No. WO85/03932, PCT Pub. Date Sep. 12, 1985

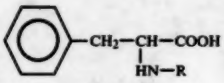
PCT Filed Mar. 1, 1985, Ser. No. 776,145

Claims priority, application Hungary,

Int. Cl.[4] C07C *83/00, 83/08;* C07B *57/00*

U.S. Cl. 260—501.17 8 Claims

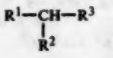
1. Process for the separation of the enantiomers of a racemic compound of the formula I



I

and/or the salts thereof, wherein

R is hydrogen or acyl, which comprises reacting a racemic compound of the formula I and/or the salt thereof with an optically active resolving agent of the formula



II

wherein

R^1 is carboxy, amino or benzylamino group,

R^2 is hydroxymethyl benzoylamino, carbamoyl or benzoyloxy-carboxymethyl, the latter group being optionally substituted by an alkyl group on the benzene ring,

R^3 is alkyl, phenyl, phenylalkyl or benzoyloxy, the latter being optionally substituted by an alkyl group on the benzene ring,

in a polar solvent and/or a mixture of solvents comprising at least one apolar solvent and optionally an achiral acid or base, thereafter

(a) when using the D-isomer of the resolving agent of the formula II, separating the crystalline diastereomer salt formed with the L-isomer of the compound of the formula I, or

(b) when using the L-isomer of the resolving agent of the formula II, separating the crystalline diastereomer salt formed with the D-isomer of the compound of the formula I, and

liberating the enantiomers of the compound of the formula I from the diastereomer salt or the mother liquor by the aid of an achiral acid or base and separating the optically active product in crystalline form.

8. A compound selected from the group which consists of: L-phenylalanine-D-N-benzoyl-phenylalanine salt, D-phenylalanine-L-N-benzoyl-phenylalanine salt, D-phenylalanine-O,O-dibenzoyl-L-tartaric acid salt, D-phenylalanine-O,O-di-p-toluoyl-L-tartaric acid salt, L-N-formyl-phenylalanine-D-2-benzylamino butanol salt, and L-N-acetyl-phenylalanyl-D-phenylglycine amide salt.

4,642,206

PRODUCTION OF SPIN POLARIZED FUSION FUELS

Arnold Honig, Manlius, N.Y., assignor to Syracuse University, Syracuse, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,087

Int. Cl.[4] G21C *3/04, 21/00*

U.S. Cl. 264—0.5 13 Claims

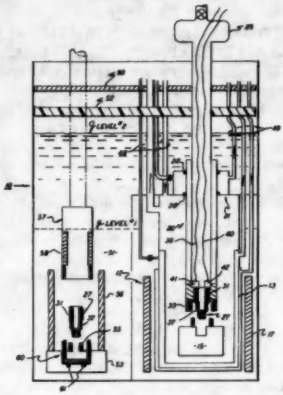
1. The method of producing polarized deuterons in solid HD that includes the steps of

providing a sample of HD containing a 10^{-4} to 10^{-3} concentration (mole fraction) of p-D_2,

irradiating the sample with radiation that produces defect centers in the sample for increasing the conversion rate of p-D_2 to o-D_2,

subjecting the sample simultaneously to a magnetic field greater than 10 Tesla and a temperature less than 10 m°K. such that the H_o/T ratio is in a range of between 1000 and 7500 T/°K. corresponding to a deuteron polarization range of 20% to 90%, and

allowing p-D_2 to convert to o-D_2 to increase the relaxation time of the polarized deuterons at ordinary liquid helium temperatures of 1°–4° K. and low magnetic fields of about 0.1 Tesla.



11. The method of producing polarized tritons in solid HT that includes the steps of

epitaxially depositing alternate layers of HT having a thickness of about 1 μm on thicker layers of solid HD at temperatures 0.3 to 4° K. wherein the protons in the HD are polarized and the deuterons are either polarized or unpolarized,

allowing the proton polarization in the HD layer to diffuse to polarize the protons in the HT layers through spin diffusion,

placing the layers in a radio frequency field, and

radiating the layers with radio frequencies to induce partially forbidden transitions between the polarized proton and the unpolarized triton coupled energy levels to polarize said tritons directly.

4,642,207

PROCESS FOR PRODUCING ULTRAFINE PARTICLES OF CERAMICS

Masahiro Uda, Tokyo; Satoru Ohno, Kiyose, and Hideo Okuyama, Kawasaki, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 616,686

Claims priority, application Japan, Jun. 4, 1983, 58-98786

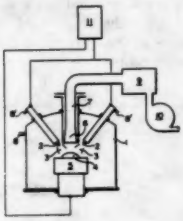
Int. Cl.[4] B29B *9/00*

U.S. Cl. 264—10 4 Claims

1. A process for producing ultrafine ceramic particles which comprises

(1) contacting a metal mass with a gas activated by an arc plasma or a high frequency induction plasma at a pressure of about 50 to 760 torr to generate ultrafine particles of

ceramic containing said metal as an ingredient, wherein said gas is selected from the group consisting of nitrogen,



oxygen and a gaseous mixture of nitrogen and hydrogen, and

(2) cooling and collecting said particles.

4,642,208

METHOD AND APPARATUS FOR DISPOSING DUST PRODUCED DURING AMORPHOUS SILICON FILM-FORMING PROCESS

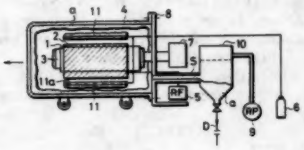
Yasui Masaru, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed May 14, 1985, Ser. No. 733,948

Claims priority, application Japan, May 16, 1984, 59-96653

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 264—37 **6 Claims**



1. A method of disposing dust produced during a process for forming an amorphous silicon film by decomposing a starting material gas containing silane gas as its principal component, comprising the steps of:

capturing said dust without causing its scattering to the outside of a system for forming said amorphous silicon film;

mixing the captured dust with a heat-distillable non-inflammable liquid having affinity to silicon to thereby render the dust to a slurry-form mixture;

heat-distilling the slurry-form dust mixture to substantially recover the liquid contained therein; and

collecting solidified mass or pellets of dust resulting from said heat-distilling so as to be used for recycling purpose.

4,642,209

TAXIDERMY MOLD WITH MEANS FOR HOLDING EYE WITHIN MOLD DURING FORMATION OF TAXIDERMY FORM, AND METHOD

Leon T. Powell, Salisbury, N.C., assignor to McKenzie Taxidermy Supply, Inc., Granite Quarry, N.C.

Filed Aug. 16, 1985, Ser. No. 766,439

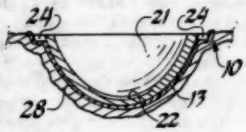
Int. Cl.⁴ B29C *67/22, 39/10, 33/14, 39/26*

U.S. Cl. 264—46.4 **7 Claims**

1. A method of holding an artificial eye within a taxidermy mold during the molding process whereby the eye is molded into a taxidermy form, comprising the steps of:

a. providing a pair of opposing, complementary mold parts adapted to fit together to form a cavity, with each mold part having interior walls defining an anatomically correct internal shape for forming an anatomically correct taxidermy form upon the introduction of a hardenable foaming liquid into the cavity; providing in the interior walls of each of the mold parts an eye socket recess, said recess having a shape defining a part of a sphere and adapted to receive the front, spherical portion of an artificial eye while leaving an exposed rear part extending into the mold cavity for being molded into the hardened foam of the taxidermy form;

b. applying an adhesive to the surface of the eye socket recess portion of the interior walls of each of the mold



parts, said adhesive having selective adhesion for holding an artificial eye in the eye socket recess during molding and sealing the eye socket recess against the introduction of the foamingn liquid thereinto during molding;

c. applying the artificial eye into the eye socket recess and releasably adhering the eye to the eye socket recess during molding; and

d. removing the taxidermy mold from the taxidermy form upon hardening of the foaming liquid to reveal a molded taxidermy form having an eye molded therein which is substantially free of adhesive.

4,642,210

ROTARY CORDIERITE HEAT REGENERATOR HIGHLY GAS-TIGHT AND METHOD OF PRODUCING THE SAME

Yutaka Ogawa; Shunichi Yamada, both of Nagoya, and Toshiyuki Hamanaka, Suzuka, all of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 540,306, Oct. 11, 1983, Pat. No. 4,489,774. This application Sep. 18, 1984, Ser. No. 651,857

Claims priority, application Japan, Dec. 29, 1982, 57-230057

Int. Cl.⁴ C04B *35/84, 41/87*

U.S. Cl. 264—62 **7 Claims**

1. A method of producing a rotary cordierite heat regenerator having a high gastightness, comprising the steps of shaping and firing a cordierite honeycomb structural body, said honeycomb structural body having a plurality of porous partition walls defining channels in the honeycomb structural body, filling open pores in substantially all of said plurality of porous partition walls with a filler substance, said filler substance and said partition walls having a difference in thermal expansion of less than 0.1% at 800° C., after firing, and firing the honeycomb structural body with the filler substance applied thereto at a temperature within a range of 1,350°–1,430° C.

4,642,211
PREPARATION OF DRY POLYCAPROLACTAM GRANULES

Peter Elbs, Otterstadt; Wolfgang-Dieter Jeserich, Frankenthal, and Rudolf Wehr, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 662,558

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338294

Int. Cl.[4] B29C *47/88*

U.S. Cl. 264—85 **5 Claims**

1. A process for the preparation of dry polycaprolactam granules containing from 8 to 13% by weight of caprolactam and its oligomers which comprises: extruding a polycaprolactam melt containing the stated amount of caprolactam and its oligomers, cooling the extrudates to 100°–150° C., maintaining the extrudates at this temperature until the polycaprolactam has substantially crystallized, and then immediately granulating the extrudates, and maintaining the granules in a stream of inert gas, in the absence of molecular oxygen, for from 1 to 4 hours at from 100° to 150° C., and cooling the granules.

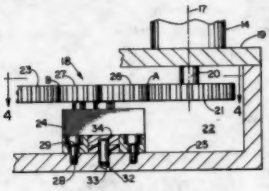
4,642,212
METHOD FOR LOCATING A PRECISION ROBOTIC BASE COMPONENT

Edward J. Bailey, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 8, 1985, Ser. No. 720,777

Int. Cl.[4] B32B *31/06*

U.S. Cl. 264—262 **2 Claims**



1. A method for locating a precision robotic base component in a robotic base compartment, comprising the following steps:

(a) securing a keying element in said base compartment of a relatively fixed robotic base;

(b) forming a clearance opening for said keying element in said robotic base component;

(c) locating said robotic base component in said base compartment with said keying element extending into said clearance opening;

(d) providing said keying element with release means;

(e) then filling at least a portion of saio opening with a pourable, hardenable material, said material surrounding said keying element; and

(f) then next allowing said material to harden onto said robotic base component and allowing said robotic base component to be removable from said keying element.

4,642,213
ANTICIPATORY CONTROL OF XENON IN A PRESSURIZED WATER REACTOR

Albert J. Impink, Jr., Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1984, Ser. No. 635,373

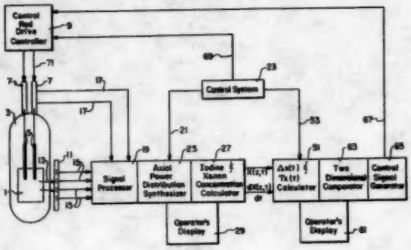
Int. Cl.[4] G21C *7/36*

U.S. Cl. 376—218 **26 Claims**

1. A method of automatically dampening xenon-135 spatial transients in the core of a pressurized water reactor having control rods which regulate reactor power level, comprising the steps of:

measuring the neutron flux in the reactor core at a plurality of axially spaced locations on a real-time, on-line basis;

repetitively generating from said neutron flux measurements, on a point-by-point basis, signals representative of the current axial distribution of xenon-135, and signals representative of the current rate of change of the axial distribution of xenon-135;



generating from said xenon-135 distribution signals and said rate of change of xenon distribution signals, control signals for reducing the xenon transients; and

positioning the control rods as a function of said control signals, to dampen said xenon-135 spatial transients.

4,642,214
NUCLEAR PEBBLE BED REACTOR WITH INHERENT PASSIVE STABILIZATION IN THE EVENT OF DAMAGE

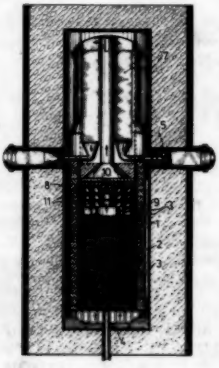
Wang D. Zhong, Julich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,194

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149794

Int. Cl.[4] G21C *7/06*

U.S. Cl. 376—221 **3 Claims**



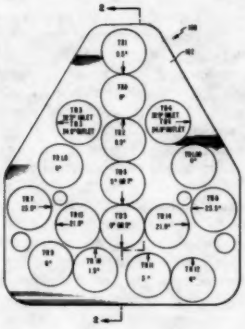
1. In a high-temperature nuclear reactor having a ring-shaped arrangement of spherical fuel elements surrounding an axial graphite column; the improvement comprising said graphite column formed from a mass of graphite spheres, a discharge for introducing said graphite spheres into said reactor arranged at a variable distance from the mass of graphite spheres, and means for varying the discharge rate of said graphite spheres into said reactor, said variable distance of said discharge and said means being varied in a manner effective to provide variation in the graphite column diameter.

4,642,215

UNIVERSAL TOOL FOR ULTRASONIC TESTING OF NUCLEAR REACTOR VESSELS

Daniel E. Klinvex, McKeesport; Suzanne B. Crusi, Hempfield Township, Westmoreland County; William E. Kepes, Penn Township, Westmoreland County, all of Pa., and Joseph A. Vano, New Providence, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 13, 1983, Ser. No. 541,597
Int. Cl.[4] G21C *17/00*; G01N *29/04*
U.S. Cl. 376—249 21 Claims



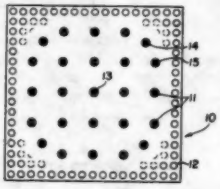
1. A composite tool for inspecting portions of a plurality of objects for locating defects therein, each of said objects having a longitudinal axis and a different radius of curvature, said tool comprising a support plate, and a plurality of individual sensors mounted to said plate for emitting inspection beams therefrom, said sensors being arranged relative to said plate such that said inspection beams from each of said sensors penetrate a predetermined portion of said object lying substantially along an imaginary line on the surface of said object when said plate is positioned at a predetermined location relative to said line, said imaginary line lying in a plane containing said longitudinal axis of said body whereby the inspection of said predetermined portion of said object by said sensors is independent of the radius of curvature of said object being inspected.

4,642,216

CONTROL ROD CLUSTER ARRANGEMENT

William L. Orr, Ligonier; Pratap K. Doshi, Murrysville; Claude M. Mildrum, Monroeville, and Thomas R. Freeman, Greensburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1984, Ser. No. 588,596
Int. Cl.[4] G21C *7/24*
U.S. Cl. 376—327 2 Claims



1. In a nuclear reactor including a nuclear core which is cooled and moderated by light water, said nuclear core comprising a plurality of parallel arranged openings therethrough and interspersed among said fuel assemblies, a control rod cluster arrangement comprising a plurality of load follow control rod cluster assemblies with each load follow control rod cluster assembly being adapted to slidingly fit within each of some of said fuel assemblies in said parallel arranged openings, said load follow control rod cluster assemblies each comprising a plurality of elongated parallel arranged rods attached to a single spider, and including a first group of rods and a second group of rods, said first group of rods and said second group of rods each consisting of a plurality of absorber rods, said first group of rods consisting of absorber rods taken from the group consisting of B_4C, hafnium, or silver-indium-cadmium and said second group of rods consisting of absorber rods each consisting of stainless steel, said first group of rods and said second group of rods each being integrally attached at all times to said single spider, the absorber rods of said second group of rods being dispersed throughout the control rod cluster assembly, said first group of rods having a first neutron capture cross section and said second group of rods having a second neutron capture cross section different from said first cross section.

4,642,217

FUEL ROD FOR A NUCLEAR REACTOR HAVING AN IMPROVED END PLUG ASSEMBLY

John F. Wilson, Murrysville Boro; Robert K. Gjertsen, Monroeville, and Samuel Cerni, Churchill Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 26, 1984, Ser. No. 634,728
Int. Cl.[4] G21C *3/10*
U.S. Cl. 376—451 9 Claims

1. In a nuclear reactor fuel rod including a fuel tube and nuclear fuel and gas under pressure disposed within said tube, an improved end plug assembly which seals opposite ends of said tube so as to confine said fuel and pressurized gas within said tube, said assembly comprising:

(a) a pair of end plugs attached in sealing relationship to said opposite ends of said tube;

(b) at least one of said end plugs having an inner body portion fitted wtihin said end of said tube and an outer body portion extending outwardly from said tube; and

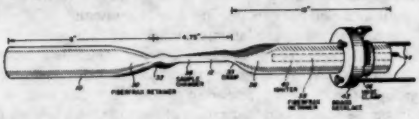
(c) said one end plug having a cavity defined therein which communicates with said fuel tube, said cavity including an outer region within said outer body portion and an inner region within said inner body portion, said outer cavity region being undercut relative to said inner cavity region.

4,642,218

HOT ROLLING OF CERAMICS BY THE USE OF SELF PROPAGATING SYNTHESIS

Roy W. Rice, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 19, 1984, Ser. No. 662,933
Int. Cl.[4] C22C *32/00*
U.S. Cl. 419—11 24 Claims



1. A method for producing high technology ceramics with minimal porosity comprising the steps of:

filling a can with constituent powders of a ceramic;

igniting the powders at a localized point so a reaction front is created in the powder that propogates from the point; and

applying localized pressure to the can such that the propagation reaction front in the ignited powder is subJected to the pressure.

4,642,219

BEARING STEEL AND METHOD OF MANUFACTURING THE SAME

Yatsuka Takata, Chita; Tadamasa Yamada, Nagoya, and Eiki Kikuchi, Tokai, all of Japan, assignors to Aichi Steel Works, Ltd., Tokai and Koyo Seiko Kabushiki Kaisha, Osaka, both of, Japan

Filed Mar. 4, 1985, Ser. No. 707,820
Claims priority, application Japan, Mar. 14, 1984, 59-50073
Int. Cl.[4] C22C *38/18*
U.S. Cl. 420—104 23 Claims

1. A bearing steel of improved durability life, consisting essentially of, by weight:

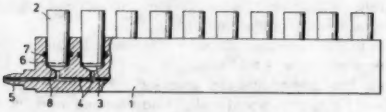
0.70–1.10% carbon, 0.15–1.60% Si, 0.15–1.15% Mn, 0.50–1.60% Cr, not more than 0.010% P, not more than 0.002% S, not more than 0.015% Al, not more than 0.0006% O, not more than 0.0050% N, and not more than 0.0015% Ti, the remainder being Fe together with impurities, said steel having a reduced amount of non-metallic inclusions of 0.010% by area or less with the average size of the inclusions being no more than 15 microns.

4,642,220

APPARATUS FOR CARRYING OUT ANALYSIS

Rune Björkman, Bälinge, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

Continuation of Ser. No. 448,910, Dec. 3, 1982, abandoned. This application Apr. 16, 1985, Ser. No. 723,750
Claims priority, application Sweden, Apr. 10, 1981, 8102316
Int. Cl.[4] B01L *11/00*
U.S. Cl. 422—101 3 Claims



1. Apparatus for carrying out analyses that comprise at least one incubation step and at least one step for separating a liquid hydrophilic phase from a phase which is insoluble in said liquid phase, said apparatus comprising

(a) a plurality of reaction vessels which make it possible to simultaneously carry out similar working sequences in said reaction vessels,

(b) a support structure including a plurality of recesses and supporting said plurality of reaction vessels in a desired array in said recesses,

(c) a porous bottom element in a lower portion of each of said reaction vessels, each porous bottom element being able to retain a reaction mixture thereabove during an incubation step and defining a chamber in each of said recesses beneath said bottom elements,

(d) a pressure regulating system connected to said chambers so as to create a desired pressure differential between said chambers and a space above the porous bottom element of each of said reaction vessels, said pressure regulating system including;

(1) means to elevate the pressure in said chambers above the pressure within the reaction vessels so as to insure against liquid leakage from said reaction vessels into said chambers,

(2) means to decrease the pressure in said chambers below the pressure within the reaction vessels so as to facilitate liquid flow downwardly through the porous bottom elements in said reaction vessels, and

(3) means to control said pressure elevating means and said pressure decreasing means, respectively, and

(e) a hydrophilic filter in the lower portion of each of said reaction vessels, each of said filters being fixedly applied against the upper surface of one of said porous bottom elements and covering the pores thereof, each of said filters being constructed so as to be penetrated by and to retain hydrophilic liquid, thereby permitting the application of a high pressure differential between said chambers and the interior of said reaction vessels by said pressure elevating means without bubbling occuring through said porous bottom elements.

4,642,221

METHOD AND COMPOSITION FOR INHIBITING CORROSION IN AQUEOUS HEAT TRANSFER SYSTEMS

Gerald D. Hansen, Holicong, and Joseph N. Biber, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 5, 1983, Ser. No. 510,502
Int. Cl.[4] C23F *11/04*
U.S. Cl. 422—16 9 Claims

1. In a method of inhibiting corrosion of copper or copper alloy metallic surfaces which are in contact with an aqueous liquid containing hypochlorite ions by adding to the aqueous liquid an aromatic triazole, the improvement comprising adding to the aqueous liquid an imino compound having the structural formula

NHRR'

where R and R' are identical or different radicals selected from saturated aliphatic carboxylic acid radicals having 2 to 6 carbon atoms, saturated aliphatic carboxylic acid ester radicals having 2 to 6 acid moiety carbon atoms and 3 to 16 total carbon atoms, and water soluble alkali or alkaline earth metal salts of saturated aliphatic carboxylic acid radicals having 2 to 6 carbon atoms and mixtures of these.

4,642,222

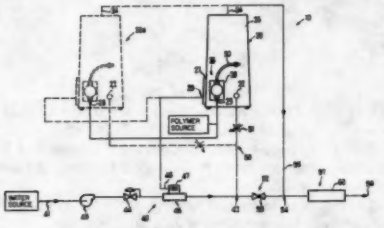
POLYMER FEED SYSTEM

Carl L. Brazelton, Austin, Tex., assignor to Stranco, Inc., Bradley, Ill.

Filed Jul. 2, 1984, Ser. No. 627,046
Int. Cl.[4] G05D *11/13*
U.S. Cl. 422—111 13 Claims

1. A polymer feed system for activating and diluting a polymer with water comprising at least one mixing and activating apparatus including a vessel defining a mixing chamber, a water inlet to said chamber and a polymer inlet to said cham-

ber and an outlet to said chamber, said at least one mixing and activating apparatus being constructed and arranged to activate the polymer fully and to dilute same and to provide the diluted and fully activated polymer at said outlet, a first flowmeter coupled to said water inlet for measuring and indicating the rate of flow of water thereto, pump means having means to set the flow rate of the pump means and coupled to a source of polymer for delivering polymer to said polymer inlet, first conduit means coupled to a source of water, second conduit means coupled between said first conduit means and said first flowmeter for delivering water to said mixing and activating apparatus, said first and second conduit means being coupled at



a junction, third conduit means coupled to said outlet, fourth conduit means coupled between said third conduit means and the junction of said first and second conduit means, said third and fourth conduit means being coupled at a junction, and fifth conduit means coupled to the junction of said third and fourth conduit means to provide further diluted and fully activated polymer, said fourth conduit means including a throttling valve for further diluting the diluted and fully activated polymer by an amount depending on the setting of said valve, and a second flowmeter positioned and arranged so as to measure and indicate the rate of flow of water in said first conduit means or said second conduit means.

4,642,223

METHOD FOR REMOVING SPENT CATALYST FROM A REACTOR TOWER AND ASSEMBLY FOR FACILITATING SAME

Abbas Al-Saigh, Fort McMurray, Canada, assignor to Alberta Energy Company Ltd.; Canadian Ocidental Petroleum Ltd.; Esso Resources Canada Limited, all of Calgary; Gulf Canada Limited, Toronto; Her Majesty the Queen in right of the Province of Alberta Canada, as represented by the Minister of Energy and Natural Resources, Edmonton; HBOG-Oil Sands Limited Partnership, Calgary; PanCanadian Petroleum Limited, Calgary and Petro-Canada Inc., Calgary, all of, Canada

Filed Apr. 2, 1985, Ser. No. 719,208

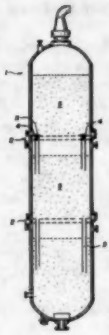
Int. Cl.[4] B01J *8/04*

U.S. Cl. 422—191 **3 Claims**

1. In combination:

a catalytic reactor tower defining a chamber and having a plurality of interbed assemblies which extend generally horizontally across the tower chamber at vertically spaced apart levels and which sub-divide the chamber into a plurality of catalyst bed sections, one or more of which sections is to be emptied of spent catalyst at the end of a run by vacuuming said catalyst and delivering it upwardly out of the tower, said interbed assemblies each providing a grid for supporting a bed of particulate catalyst thereon, each such interbed assembly having at least one generally vertical drain tube extending therethrough to enable spent catalyst to be drained by gravity from one section to the next lower section, for removal from the base of the tower; and

a plurality of removable catalyst baskets, at least one of said interbed assemblies having at least one drain tube having therein one of said plurality of catalyst baskets, each said bsket having an apertured wall, said basket being operative to retain the column of catalyst thereabove, to prevent it from draining downwardly into the next lower bed section while permitting fluid to flow freely therethrough,



whereby the bed sections to be vacuumed may be vacuumed at the same time as the bed sections to be drained by gravity are drained.

4,642,224

PROCESS FOR REDUCING IRON AND VANADIUM IN PHOSPHORIC ACID SOLUTION

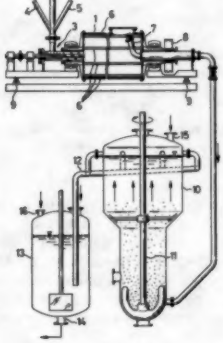
Herbert Ressel, Erftstadt; Hans Haas, Swisttal, and Johannes Krause, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 1, 1985, Ser. No. 782,701

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1984, 3437684

Int. Cl.[4] C01B *25/16*

U.S. Cl. 423—321 R **6 Claims**



1. A process for reducing iron and vanadium in phosphoric acid solution with the aid of a reductant, which comprises reacting the phosphoric acid solution containing iron and vanadium with granular ferrophosphorus as the reductant.

4,642,225

METHOD OF BINDING SULFUR COMPOUNDS BY ADDING ADDITIVES

Klaus Leikert, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Dec. 13, 1984, Ser. No. 681,223

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345330

Int. Cl.[4] C01B *17/00*; B01J *8/00*

U.S. Cl. 423—244 8 Claims

1. A method of binding sulfur oxide compounds which are produced as reaction products during the combustion of sulfur-containing fuels in a charging bed or fluidized bed furnace at temperatures above 1000° C. that have adverse effects on reaction temperature as well as upon operation of the furnace resulting in formatio of slag on surfaces of the furnace, said method including the step of adding additives to the flue gases coming from said furnace; the method comprising the steps of:

passing the hot flue gases as they exit directly from said charging bed or fluidized bed furnace so that the hot flue gases first go through a cooling zone wherein the hot flue gases themselves are cooled to lower the temperature of said flue gases to a value of temperature that is below 1000° C. and that is aimed at an optimum reaction temperature to effect the binding of sulfur oxide compounds in accordance with the additives to be employed, the cooling zone for the flue gas directly after leaving the furnace representing a feature arranged prior to actual flue-gas-waste-heat utilization;

only thereafter introducing said additives into said cooled-off flue gases via a carrier medium at a location at which conditions are maintained that avoid the adverse effects on reaction temperature as well as upon operation of the furnace resulting in formation of salg on surfaces of the furnace; and

using additives selected from the group consisting of oxides and hydroxides of metals selected from the group consisting of sodium, potassium, aluminum, barium, cadmium, calcium, copper, iron, lead, magnesium, manganese, and zinc.

4,642,226

PROCESS FOR THE PREPARATION OF ZEOLITE BETA USING DIBENZYLDIMETHYLAMMONIUM IONS AND THE PRODUCT PRODUCED

Robert B. Calvert, Concord, Mass.; Clarence D. Chang, Princeton, N.J.; Mae K. Rubin, Bala Cynwyd, and Ernest W. Valyocsik, Yardley, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 684,189, Dec. 20, 1984, abandoned, which is a continuation of Ser. No. 600,682, Apr. 16, 1984, abandoned, and a continuation of Ser. No. 684,202, Dec. 20, 1984, abandoned, which is a continuation of Ser. No. 608,847, May 10, 1984, abandoned. This application Mar. 29, 1985, Ser. No. 717,997

The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—328 14 Claims

1. A method for synthesizing a crystalline silicate consisting essentially of one having the structure of zeolite Beta which comprises (i) preparing a reaction mixture capable of forming said crystalline silicate, said mixture comprising sources of alkali metal ions (M), dibenzyldimethylammonium ions (R), an oxide of silicon, water and an oxide of aluminum and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3=20-250
H_2O/SiO_2=10-200
OH/SiO_2=0.10-2.0
M/SiO_2=0.05-1.0
R/SiO_2=0.10-2.0,

(ii) maintaining the reaction mixture at conditions sufficient to crystallize said silicate, including a temperature of from about 80° C. to about 175° C., and (iii) recovering said crystalline silicate from step (ii), said recovered crystalline silicate containing dibenzyldimethylammonium and alkali metal.

12. Dibenzyldimethylammonium-containing zeolite Beta.

4,642,227

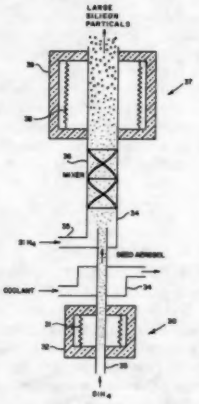
REACTOR FOR PRODUCING LARGE PARTICLES OF MATERIALS FROM GASES

Richard C. Flagan, Pasadena, Calif., and Mohammed K. Alam, Athens, Ohio, assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 409,941, Aug. 20, 1982, abandoned. This application Jan. 20, 1984, Ser. No. 572,604

Int. Cl.[4] C01B *33/02*

U.S. Cl. 423—349 13 Claims



1. A method for producing particles of material from a gas, or gases, using a free-space flow reactor, said reactor having a mixing zone in series with a primary reaction zone, comprising the steps of

introducing into said mixing zone said gas, or mixture of said gases, for flow through said reactor,

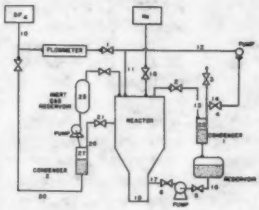
mixing a concentration of seed particles of said material with said gas, or gases, in said mixing zone, said concentration being limited such that the quantity of said gas or gases is sufficient to grow each of the particles in the reactor to the desired size larger than one micron within the reactor by vapor deposition alone, and

reacting said gas or gases in said primary reaction zone at a rate which is limited such that the products of gas phase reactions deposit on the seed particles entrained in the flow through said reactor, the rate of deposition being sufficient for the limited reacting rate to prevent homogenous nucleation of new particles, the ultimate particles size being less than 100 microns and the reaction time in said primary reaction zone being of the order of 0.2-10 seconds.

4,642,228
FLUXING SYSTEM FOR REACTORS FOR PRODUCTION OF SILICON

Angel Sanjurjo, 15010 Penitencia Creek Rd., San Jose, Calif. 95132, and Kenneth M. Sancier, 561 Berkeley Ave., Menlo Park, Calif. 94025

Filed Jul. 24, 1985, Ser. No. 758,597
Int. Cl.[4] C01B *33/02*
U.S. Cl. 423—350 **10 Claims**



1. A process for the production of substantially pure elemental silicon said process comprising the steps of:

(a) passing a halogenated hydrocarbon gas containing one or more fluorine atoms that is condensible from −90° C. to +50° C. at atomspheric pressure into a reaction zone for use in the production of elemental silicon, through the reduction of the corresponding gaseous halide by means of an elemental alkali metal;

(b) passing a silicon tetrahalide into said reaction zone to displace said condensible halogenated hydrocarbon gas;

(c) passing an alkali metal into said reaction zone to obtain a mixture of silicon and an alkali metal halide; and

(d) separating substantially pure silicon from said mixture.

4,642,229
BONE-SEEKING COMPLEXES OF TECHNETIUM-99M

Stephen A. Cumming, High Wycombe, and James D. Kelly, Amersham, both of England, assignors to Amersham International plc, Buckinghamshire, England

Filed Apr. 16, 1984, Ser. No. 600,408
Claims priority, application United Kingdom, Apr. 18, 1983, 8310438
Int. Cl.[4] A61K *43/00, 49/00, 49/02*
U.S. Cl. 424—1.1 **6 Claims**

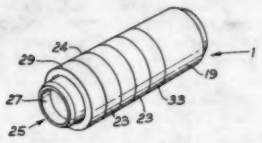
6. A bone-seeking composition comprising an aqueous solution of a Technetium-99-m-tin-ethylene glycol-1,2,-bisphosphonate complex.

4,642,230
RELEASE DEVICE

Derek J. Whitehead, Poynton, and Michael T. Shepherd, Cheddington, both of England, assignors to Castex Products Limited, Macclesfield and The Wellcome Foundation Limited, London, both of, England

Filed May 21, 1985, Ser. No. 736,555
Claims priority, application United Kingdom, Jun. 2, 1984, 8414123; Aug. 31, 1984, 8422093; Mar. 2, 1985, 8505410
Int. Cl.[4] A01N *25/34;* A61K *9/22, 9/26*
U.S. Cl. 424—15 **20 Claims**

1. A release device in the form of a bolus of generally elongate configuration having two ends, said bolus comprising a liquid impermeable casing and a core surrounded by said casing and exposed at least at one of said two ends of the bolus, said core comprising a biologically active material and being degradable when the bolus is exposed to a liquid environment to release said material, and said casing comprising a plurality

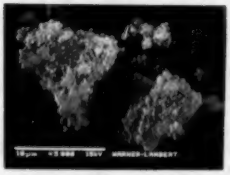


of outer segments which are successively shed from the bolus as said core is progressively degraded.

4,642,231
MAGNESIUM TRISILICATE SUITABLE FOR PREPARATION OF MEDICAMENT ADSORBATES OF ANTIHISTAMINES

David Peters, Long Valley; John Denick, Jr., Newton, and Anil K. Talwar, Long Valley, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 516,002, Jul. 20, 1983, Pat. No. 4,581,232. This application Dec. 19, 1985, Ser. No. 811,053
Int. Cl.[4] A61K *9/18, 33/12*
U.S. Cl. 424—15 **7 Claims**



1. A medicament adsorbate which comprises magnesium trisilicate having a surface area of at least 400 m^2/g and having a flake-like structure with multiple interstitial spaces, and containing adsorbed therein from about 1% to about 20% by weight of the adsorbate of a medicament drug wherein the medicament drug is selected from the group of antihistamine materials consisting of chlorpheniramine maleate, phenindamine tartrate, pyrilamine maleate, doxylamine succinate, phenyltoloxaime citrate, diphenhydramine hydrochloride, promethazine, triprolidine, and mixtures thereof.

4,642,232
FORMULATED ALLERGEN PREPARATION AND ITS USE

Rolf L. Yman, Upsala, Sweden, assignor to Pharmacia AB, Upsala, Sweden

PCT No. PCT/SE84/00227, § 371 Date Jan. 28, 1985, § 102(e) Date Jan. 28, 1985, PCT Pub. No. WO85/00015, PCT Pub. Date Jan. 3, 1985
PCT Filed Jun. 15, 1984, Ser. No. 709,033
Claims priority, application Sweden, Jun. 15, 1983, 8303401
Int. Cl.[4] A61K *9/24, 39/00*
U.S. Cl. 424—19 **10 Claims**

1. A formulated preparation for oral administration and ingestion containing an immunotherapeutically active amount of at least one allergen, which preparation

(i) is resistant to gastric juice and contains in addition to said at least one allergen a therapeutically active amount of an anti-allergic substance that will inhibit an allergen induced IgE-mediated allergic and inflammatory reaction,

(ii) being composed of at least one inner core containing the allergen and of an outer envelope which surrounds and

confines said at least one core and which contains said anti-allergic substance, and

(iii) being formulated so that upon being administed it gives a delayed release of both said active amount of antiallergic substance and said immunotherapeutic amount of allergen in a manner such that said two amounts are released in the said order under the action of intestinal juice, but not under the action of gastric juice, said allergen being allergenic in the sense that it is able to mount an immune response in a mammal resulting in antibody of the IgE-class and that it is able to trigger an allergic reaction when the mammal is later exposed to the allergen.

4,642,233

GASTROINTESTINAL DRUG DELIVERY SYSTEM COMPRISING A HYDROGEL RESERVOIR CONTAINING A PLURALITY OF TINY PILLS

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 360,477, Mar. 22, 1982, Pat. No. 4,434,153. This application Jan. 16, 1984, Ser. No. 571,009

The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.

Int. Cl.[4] A61K *9/22, 9/26*

U.S. Cl. 424—19 **3 Claims**

1. An orally administrable device for the controlled delivery of a beneficial gastrointestional administrable drug to the fluid environment of the gastrointestinal tract over a prolonged period of time, the device comprising:

(a) a reservoir shaped and sized for oral admittance into the gastrointestinal tract comprising a pharmaceutically acceptable non-toxic polysaccharide hydrogel that absorbs, imbibes fluid from the gastrointestinal tract and retains fluid within its polysaccharide structure, expands, swells and exhibits a 2 to 50 fold volume increase, said polysaccharide hydrogel a member selected from the group consisting of a noncross-linked polysaccharide hydrogel and a covalent cross-linked polysaccharide hydrogel said hydrogel additionally selected from the group consisting of a naturally occurring polysaccharide hydrogel and a synthetic polysaccharide hydrogel;

(b) a plurality of tiny pills dispersed throughout the reservoir comprising the polysaccharide, the tiny pills comprising;

(1) a core of a beneficial gastrointestinal administrable drug; and,

(2) a wall comprising in a least a part a drug release rate controlling cellulosic polymer having an acetyl content of 21 to 44.8%, that surrounds the core of the beneficial drug and releases the drug when the device is in use into the gastrointestinal tract over time.

4,642,234

DISINFECTION OF CONTACT LENSES

David J. G. Davies; Brian J. Meakin, and John E. Rees, all of Bath, United Kingdom, assignors to University of Bath, Bath, United Kingdom

PCT No. PCT/GB84/00311, § 371 Date May 14, 1985, § 102(e) Date May 14, 1985, PCT Pub. No. WO85/01209, PCT Pub. Date Mar. 28, 1985

PCT Filed Sep. 12, 1984, Ser. No. 734,270

Claims priority, application United Kingdom, Sep. 15, 1983, 8324781

Int. Cl.[4] A61K *31/55, 31/74, 33/42*

U.S. Cl. 424—78 **11 Claims**

1. A solid composition for addition to tap water to provide a non-eye irritant aqueous disinfecting solution for hydrophilic soft contact lenses, said composition comprising:

an antimicrobial effective amount of an opthalmically acceptable chlorhexidine salt;

an opthalmically acceptable polyphosphate sequestering agent for calcium or magnesium cations in an amount effective to sequester said ions from tap water; and

an opthalmically acceptable metabisulphite, sulphite or thiosulphate dechlorinating agent in an amount effective to remove chlorine from a solution of the chlorhexidine salt in tap water.

4,642,235

CHEWING GUM WITH CENTER FILL COMPRISING THAUMATIN OR MONELLIN AND METHOD

Michael A. Reed, and Gordon N. McGrew, both of Evanston, Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Oct. 26, 1984, Ser. No. 665,174

Int. Cl.[4] A23G *3/30*

U.S. Cl. 426—5 **12 Claims**

1. A center-filled chewing gum comprising a chewing gum base shell enclosing an internal void therein and a center fill in the void, the center fill comprising a sweetener selected from the group consisting of thaumatin and monellin in an amount greater than 5 ppm but less than 100 ppm by weight of the chewing gum.

4,642,236

PROCESS FOR REDUCING THE LEVEL OF OBJECTIONABLE FLAVORS IN VEGETABLE PROTEIN BY MICROORGANISM CONTACT

Beverly A. Friend, Collinsville, Ill.; Dennis L. Gierhart, High Ridge, and Judy K. O'Brien, St. Louis, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Apr. 4, 1985, Ser. No. 720,110

Int. Cl.[4] A23J *3/00;* **A23L** *1/015, 1/211*

U.S. Cl. 426—44 **26 Claims**

1. A method of reducing undesirable flavor components in a vegetable protein material comprising:

forming an aqueous slurry of a vegetable protein material; and

contacting said slurry with viable mycelia of a mold selected from the group consisting of the genus Rhizopus and genus Aspergillus under conditions effective to reduce the level of flavor components in the material but ineffective to result in substantial replication of the mold mycelia.

4,642,237

STABLE OXIDANT ALPHA-AMYLASE CONCENTRATES FOR USE IN BAKING

Vincent A. De Stefanis, East Amherst; Robert W. Erickson, Buffalo, and Peter M. Ranum, Grand Island, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 24, 1985, Ser. No. 726,750

Int. Cl.[4] A21D *2/22*

U.S. Cl. 426—64 **1 Claim**

1. A highly concentrated additive composition for use in yeast leavened wheat flour bakery products, said additive composition being storage stable up to temperatures of about 120° F. for periods exceeding two weeks, said additive composition consisting of, by weight:

19.84% ascorbic acid

7.50% fungal α-amylase

11.30% potassium bromate

15.00% calcium carbonate

3.00% tricalcium phosphate

43.36% corn starch

said fungal α-amylase concentrate containing about 70,000 SKB units/g thereof.

4,642,238

PROCESS FOR THE PRODUCTION OF A MINERAL FORTIFIED PROTEIN COMPOSITION

Santa H. C. Lin, and Myong J. Cho, both of Crestwood, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Feb. 3, 1986, Ser. No. 824,990
Int. Cl.[4] A23J *3/00;* A23L *1/304*
U.S. Cl. 426—74 24 Claims

1. A method of producing a mineral enriched protein composition for use in the product of foodstuffs comprising:

(a) forming a hydrated gel of an alkaline earth metal salt used for mineral enrichment;

(b) adding said hydrated gel to an aqueous slurry of an isolated vegetable protein material to form a mineral enriched protein composition; and

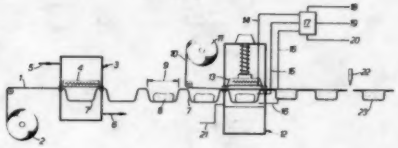
(c) dewatering said composition.

4,642,239

PACKAGING OF FRESH MEAT

Andrew N. Ferrar, Bolton, and Arthur N. Jones, Beaconsfield, both of England, assignors to Transparent Paper PLC, Lancashire, England

Continuation-in-part of Ser. No. 569,477, Jan. 9, 1984, abandoned. This application Apr. 10, 1985, Ser. No. 721,776
Int. Cl.[4] B65D *81/20;* B65B *31/00*
U.S. Cl. 426—396 13 Claims



1. A method of packaging fresh meat, comprising the steps of forming a first web of material into a receptacle to receive fresh meat, placing the fresh meat in said receptacle, subjecting said meat to a vacuum treatment to remove the permanent gases therefrom and to reduce the oxygen partial pressure in the vicinity of said meat to below 0.9 mm of mercury, effecting controlled partial release of said vacuum to an oxygen partial pressure in excess of about 11 mm of mercury, said release effected at a rate sufficiently rapid to prevent substantially any detriment to said meat, contacting the mouth of the receptacle with a second web of material, sealing said second web to said first under the latter pressure to form a closed package containing said fresh meat and heating the resulting package to shrink one of said webs into close contact with said fresh meat; at least one of said webs being transparent and at least one of said webs being heat-shrinkable and having a permeability to oxygen of at least 3000 ml/m^2/24 hours/atmosphere differential for a thickness of 25 microns at N.T.P., and a permeability to carbon dioxide substantially greater than its permeability to oxygen.

4,642,240

FOODSTUFFS CONTAINING 3-AMINOBENZESULFONIC ACID AS A SWEETENER INHIBITOR

Ronald E. Barnett, and Ronald G. Yarger, both of Suffern, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 430,541, Sep. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 274,035, Jun. 15, 1981, abandoned. This application Mar. 25, 1985, Ser. No. 715,792
Int. Cl.[4] A23L *1/226, 1/236*
U.S. Cl. 426—538 6 Claims

1. A composition comprising a foodstuff containing a sweetener preparation and, as a sweetener inhibitor, within the range of about 0.001 to about 2.0 weight percent based on the total composition, 3-aminobenzenesulfonic acid.

4,642,241

METHOD FOR THE PREPARATION OF TEXTURED SOYBEAN DRAFF

Akinori Noguchi, Sakura, Japan, assignor to Director of National Food Research Institute and Ministry of Agriculture, Foresty and Fisheries, both of Yatabe, Japan

Filed Feb. 21, 1985, Ser. No. 703,706
Claims priority, application Japan, Dec. 27, 1984, 59-273840
Int. Cl.[4] A23L *1/20*
U.S. Cl. 426—634 16 Claims

1. A process for the preparation of a textured okara useful as a food component comprising feeding okara to a twin-screw extruder having a melting zone and heating and applying pressure in said extruder to said okara and forcing said okara through a constricted exit port from said extruder into and through a cooling die at a temperature from room temperature to 0° C. wherein said okara is cooled and said cooled okara having a textured structure is forced out of the cooling die, said okara being heated in the melting zone of said extruder, said melting zone having a temperature of from 140° to 200° C. and the pressure in said extruder being between 20 and 200 kg/cm^2G.

4,642,242

PERMANENTLY BONDED ANTITHROMBOGENIC POLYURETHANE SURFACE

Donald D. Solomon, Spring Valley; Charles W. McGary, Centerville, and Vincent J. Pascarella, Dayton, all of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 718,664, Apr. 1, 1985, Pat. No. 4,600,652. This application Mar. 19, 1986, Ser. No. 841,505
Int. Cl.[4] A01N *1/02;* B05D *3/04, 3/10*
U.S. Cl. 427—2 7 Claims

1. A process for imparting antithrombogenic activity to polyurethane polymer materials, which comprises:

a. treating the surface of a solid support with a solution of a protonated amine rich polyurethane-urea so that the polyurethane-urea is bonded to the support substrate;

b. removing solvent from the treated substrate to form a layer of the polyurethane-urea upon the support substrate;

c. activating the amine functionality on the polyurethane-urea with an alkaline buffer to form free amine groups; and

d. reacting the free amine groups with an aldehyde containing antithrombogenic agent to covalently bond the antithrombogenic agent to the polyurethane-urea in the presence of a reducing agent.

4,642,243

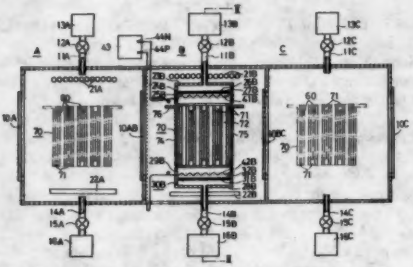
METHOD AND APPARATUS FOR FORMING NON-SINGLE-CRYSTAL LAYER

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan

Division of Ser. No. 533,941, Sep. 20, 1983, Pat. No. 4,582,720. This application Feb. 13, 1986, Ser. No. 828,908
Claims priority, application Japan, Sep. 20, 1982, 57-163728; Sep. 20, 1982, 57-163729; Sep. 25, 1982, 57-167280; Sep. 25, 1982, 57-167281
Int. Cl.[4] C23C *16/50*
U.S. Cl. 427—38 17 Claims

1. A non-single-crystal layer forming method in which a material gas for forming a non-single-crystal layer is introduced into a reaction chamber and is excited to form the non-single-crystal layer by deposition on a plurality of substrates placed in the reaction chamber where each substrate has an exterior surface upon which said material of the gas is deposited and an interior surface, wherein at least one pair of substrates are disposed with their interior surfaces facing one

another to prevent deposition of the material of the gas on the said interior surface, and wherein the material gas passes along



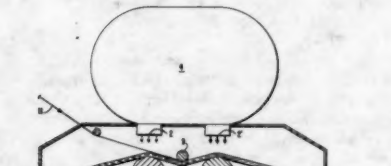
the exterior surfaces of the substrates to deposit said material thereon.

4,642,244

METHOD OF AND APPARATUS FOR ELECTRON BEAM CURING COATED, POROUS AND OTHER WEB STRUCTURES

Edwin P. Tripp, III, Wilmington; Jason Weisman, Newton, both of Mass., and George Hissong, Kennebunk, Me., assignors to Energy Sciences Inc., Woburn, Mass.

Filed Mar. 3, 1986, Ser. No. 835,185
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—44 **20 Claims**



1. A method of providing a porous web with a surface-adhering coating with negligible penetration into the pores of the web, that comprises, moving a surface carrying an electron-curable liquid coating along a predetermined path; passing a porous web for laminating contact with said coating along said path; subjecting the coating to electron beam radiation through the web before such laminating while adjusting the radiation dose only partially to cure the coating before lamination, such that it is soft or tacky, with the laminating step effecting surface spreading and adhesion with the web substantially without penetration into the pores, and immediately subjecting the laminated web and partially cured coating to further electron beam radiation of greater dose and also directed through said web fully to cure the coating.

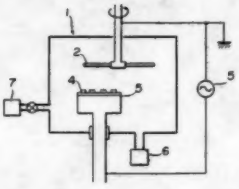
11. Apparatus for providing a porous web with a surface-adhering coating with negligible penetration into the pores of the web, having, in combination, means for moving a surface carrying an electron-curable liquid coating along a predetermined path within a shielded enclosure; means for passing a porous web into said shielded enclosure and for laminating contact with said coating along said path; electron beam generating means within the enclosure for subjecting the coating to electron beam radiation through the web before such laminating with the radiation dose adjusted only partially to cure the coating before lamination, such that it is soft or tacky, with the laminating step effecting surface spreading and adhesion with the web substantially without penetration into the pores; the electron beam generating means having means for immediately a subjecting the laminated web and partially cured coating to further electron beam radiation of greater dose and also directed through said web fully to cure the coating.

4,642,245

IRON OXIDE MAGNETIC FILM AND PROCESS FOR FABRICATION THEREOF

Osamu Ishii; Fumikatsu Yoshimura, and Iwao Hatakeyama, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Division of Ser. No. 532,978, Sep. 16, 1983, Pat. No. 4,544,612. This application May 6, 1985, Ser. No. 730,549
Claims priority, application Japan, Sep. 22, 1982, 57-164134; Jul. 15, 1983, 58-127786
Int. Cl.[4] C23C *15/00*
U.S. Cl. 427—47 **4 Claims**



1. A process for the fabrication of a -Fe_2O_3 film containing a metal element therein, said process comprising:

forming an -Fe_2O_3 film by reactive sputtering of an iron alloy target containing at least one element selected from the group consisting of Pd, Au, Pt, Rh, Ag, Ru, Ir, and Os under a 50% Ar+50% O_2 gas mixture onto an Al-alloy disc coated with an Al_2O_3 layer,

reducing said -Fe_2O_3 film in wet hydrogen gas by heating to form an Fe_3O_4 film containing said added metal, and

oxidizing said Fe_3O_4 film in air by heating to form a -Fe_2O_3 film containing said added metal.

4,642,246

PROCESS FOR CHEMICALLY BONDING A LUBRICANT TO A MAGNETIC DISK

Robert A. Janssen, Alpharetta, Ga., and Gary D. Sorenson, Eden Prairie, Minn., assignors to Magnetic Peripherals, Inc., Minneapolis, Minn.

Filed Nov. 12, 1985, Ser. No. 796,811
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—127 **7 Claims**

1. A process for lubricating a magnetic disk characterized by contacting the disk with a functionalized lubricant, heating the lubricant for a time sufficient for the functional terminal group of a sufficient portion of the lubricant to covalently bond to the surface of the disk, and reacting the residual unbonded lubricant with either an aziridine or epoxide containing molecule.

4,642,247

RECORDING MEDIUM

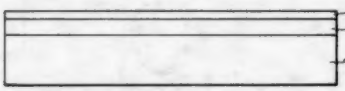
Hidemasa Mouri; Michiaki Tobita, both of Yokohama; Naonobu Eto, Yamato; Shunzo Kouno, Yokosuka; Kosuke Ohkura, Hiratsuka; Shigeo Toganoh, Setagaya; Ryuichi Arai, Sagamihara; Mamoru Sakaki, Atsugi; Kazuo Iwata, Yokohama, and Hiromi Shibasaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1985, Ser. No. 748,819

Claims priority, application Japan, Jun. 29, 1984, 59-133297; Jul. 27, 1984, 59-155443; Jul. 27, 1984, 59-155444; Jul. 27, 1984, 59-155445; Jul. 30, 1984, 59-157650; Jul. 30, 1984, 59-157651; Jul. 30, 1984, 59-157652; Dec. 28, 1984, 59-274837

Int. Cl.[4] B41M *3/00, 5/00*

U.S. Cl. 427—214 24 Claims



14. A recording process in which aqueous ink droplets are propelled onto a recording medium comprising a substrate having thereon a water-sorptive under layer covered by an upper layer of substantially water-resistant polymeric material which is sufficiently thin to provide immediate water and air permeability.

4,642,248

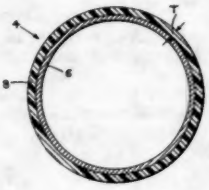
METHOD FOR COATING CYLINDRICAL MEMBERS

Howard Howland, 88 Clinton Pl., Hackensack, N.J. 07601

Filed Jun. 18, 1985, Ser. No. 745,888

Int. Cl.[4] B05D *3/08, 3/12*

U.S. Cl. 427—224 9 Claims



1. A method for providing on the outer surface of an inner cylindrical member an epoxy coating of substantially uniform final radial thickness, said method comprising the steps of applying an innermost layer of an uncured mixture of an epoxy resin and a hardener to the outer surface of said member to a depth which is less than said thickness while rotating said member about its axis, applying at least one additional layer of said uncured mixture to the outer surface of an already applied said layer while rotating said member about its axis, such that the total depth of said layers is at least as great as said thickness, heating the outermost said layer after each applying step to eliminate its porosity while rotating said member about its axis, utilizing a layer doctor blade parallel to the axis of depth of each said layer, and utilizing a leveling doctor blade parallel to the axis of said member and of adjustable distance therefrom to true up the outer surface of each said layer, and after the applying steps allowing said layers to cure.

4,642,249

CLEAR LACQUER BASED ON POLYVINYLIDENE FLUORIDE AND A PROCESS FOR THE COATING OF METALLIC SURFACES

Werner Goll, Garching, Fed. Rep. of Germany, assignor to Solvay & Cie, Societe Anonyme, Brussels, Belgium

Continuation of Ser. No. 526,549, Aug. 26, 1983, abandoned.

This application Apr. 3, 1986, Ser. No. 848,333

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234397

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—388.5 16 Claims

1. A clear polyvinylidene fluoride lacquer which comprises:

(a) 30 to 45 wt.% of polyvinylidene fluoride with a K value of 40 to 55,

(b) 4 to 15 wt.% of an acrylic resin selected from the group consisting of amides and esters of acrylic or methacrylic acid,

(c) 33 to 50 wt.% of latent, high boiling solvent which dissolves polyvinylidene fluoride only at an elevated temperature, and

(d) 3 to 15 wt.% of low boiling solvent having a boiling point up to the boiling point of ethyl glycol acetate.

11. A process for coating metallic surfaces, comprising the steps of applying the clear lacquer of claim 1 to a metal surface and thereafter heating the lacquer coated on the surface, to a temperature of from 250° to 350° C.

4,642,250

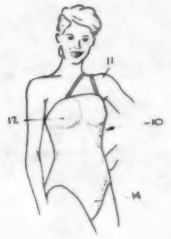
FABRICS AND GARMENTS FORMED THEREBY HAVING THERMALLY-SENSITIVE CHROMATIC PROPERTIES

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Jan. 13, 1986, Ser. No. 818,347

Int. Cl.[4] C09K *3/34*

U.S. Cl. 428—1 9 Claims



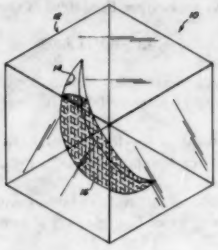
1. A garment fabric which when in contact with or in close proximity to the skin of a wearer exhibits a chromatic decorative pattern, said fabric having integrated therewith a dispersion of cholesteric liquid crystals having temperature-sensitive chromatic properties whereby the face of the fabric opposite the face next to the skin displays a color pattern that depends on the heat energy emanating from the skin and varies as a function of changes in this heat energy, said liquid crystals being macro-encapsulated by means constituted by a thin base coating of transparent polyester film bonded to the fibers of the fabric, a layer of unencapsulated liquid crystals dispersed on the base coating and a transparent polyester film forming an outer coating over the liquid crystal layer and bonded to the base coating.

4,642,251

HONEY-MOON

Susanne M. Quinn, 401 E. 80th St., Apt. 27-J, New York, N.Y. 10021

Filed Feb. 5, 1986, Ser. No. 826,238
Int. Cl.[4] B44F 9/00
U.S. Cl. 428—7 3 Claims



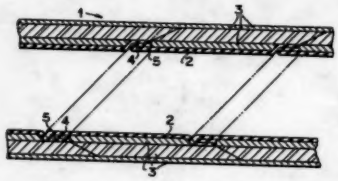
1. An ornamental device comprising:
(a) a clear plastic block having a sealed hollow chamber within being in the shape of a crescent moon; and
(b) honey liquid placed in said crescent moon shaped hollow chamber of said clear plastic block so as to be sealed therein, wherein said clear plastic block is formed in two halves, each of said halves having one longitudinal portion of said crescent moon shaped hollow chamber on its mating surface so that said honey liquid can be placed into one of said portions before said two halves are assembled together.

4,642,252

BODY FOR A PRESSURE-RESISTANT VESSEL

Hitoshi Sasaki, and Shoji Igota, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 29, 1985, Ser. No. 739,049
Claims priority, application Japan, May 29, 1984, 59-107473
Int. Cl.[4] B65D 25/14, 5/56
U.S. Cl. 428—35 13 Claims



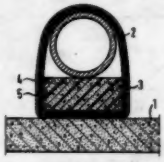
1. A pressure-resistant container having a body and metal ends which are high-frequency heat-sealed to the body, said body comprising a cylindrical body which serves as a content-protecting layer and an external shape-retention layer to keep the shape of the container, said content-protecting layer being constructed in such way that a laminate film including three layers comprising polyolefin/gas barrier/plastic is wound on a mandrel in such way that one side edge of the laminate film is folded back outward, with the polyolefin layer inside, and bonded in such way that air bubbles are not entrapped thereunder, and the other edge side of the laminate film is superimposed on and bonded to the folded part in such way that air bubbles are not entrapped between them, characterized in that said laminate film has a uniaxially stretched film of crystalline polymer on the outside of the plastic layer, and/or said shape-retention layer has a layer obtained by spirally winding a uniaxially stretched film of crystalline polymer, said metal ends being coated with at least one polymeric material selected from the group consisting of modified polyolefin, a mixture of modified polyolefin and epoxy-phenol resin, and a mixture of modified polyolefin and epoxy-urea resin.

4,642,253

INSULATING MATERIAL FOR PIPES

Rüdolf Rüoff-Schäfer, Stuttgart, Fed. Rep. of Germany, assignor to Missel GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 714,989
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410838
Int. Cl.[4] F16L 59/14, 59/02
U.S. Cl. 428—36 19 Claims



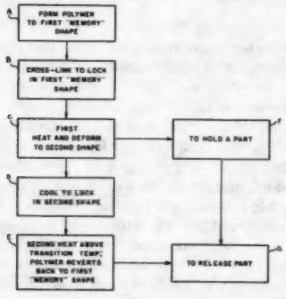
1. An insulation arrangement for a pipe which in operation carries a heated liquid, is laid on a rough cast concrete floor, and is subsequently buried beneath a layer of flooring plaster, comprising a pipe having a diameter, a floor side adjacent said floor, first and second side surfaces and a top side; insulation including an elongate layer of insulating material which is disposed beneath said floor side of said pipe and has a thickness at said bottom side, said layer forming a support for said pipe, and a sleeve of insulating material extending from said layer of insulating material substantially around said side surfaces of said pipe and over said top side, said sleeve having a thickness at said top side; and wherein said thickness of said sleeve at said top side is substantially less than said thickness of said layer of insulating material at said bottom side.

4,642,254

PROCESS AND DEVICE FOR TEMPORARILY HOLDING AND RELEASING OBJECTS

George E. Walker, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 713,477, Mar. 19, 1985. This application Mar. 4, 1986, Ser. No. 835,890
Int. Cl.[4] B29C 61/00
U.S. Cl. 428—36 11 Claims


FORM POLYMER TO FIRST "MEMORY" SHAPE
CROSS-LINK TO LOCK IN FIRST "MEMORY" SHAPE
FIRST HEAT AND DEFORM TO SECOND SHAPE
TO HOLD A PART
COOL TO LOCK IN SECOND SHAPE
SECOND HEAT ABOVE TRANSITION TEMP.; POLYMER REVERTS BACK TO FIRST "MEMORY" SHAPE
TO RELEASE PART

1. A process for one part to temporarily engage and release another part comprising the steps of:

forming a cross-linkable polymeric first part to a first memory shape;
cross-linking said polymeric first part to lock in said first memory shape;
heating said first memory shaped polymeric part to a temperature above its transition temperature;
deforming said heated memory shaped polymeric first part to a second deformed shape;
cooling said deformed second shaped first part to lock in said deformation;
engaging said deformed second shaped polymeric first part to a second part wherein said second part holds and surrounds at least a portion of said first part; and
heating said deformed second shaped first part above its transition temperature wherein said first part will revert from its deformed shape to its first memory shape and wherein the engaged and surrounded first part is released from the second part.

4,642,255

LAMINATED ARTICLE AND PROCESS FOR MAKING SAME

Frank C. Dlubak, 104 Sipes Rd., Freeport, Pa. 16229, assignor to Frank C. Dlubak, Freeport, Pa.

Filed Dec. 20, 1984, Ser. No. 687,169
Int. Cl.[4] B32B *17/12, 31/20;* B44F *1/06;* C03C *27/12*
U.S. Cl. 428—38 **17 Claims**

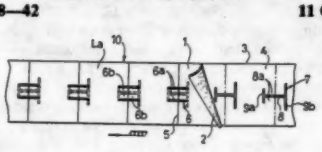
1. A decorative laminated article comprising two outer glass layers, a polyvinyl acetal layer disposed therebetween and a porous fibrous layer comprising fibrous material designed in a decorative pattern having interstices, said fibrous material disposed in a decorative pattern extending well within the peripheral edge of said laminated article, encapsulated in said polyvinyl acetal layer, said polyvinyl acetal layer extending through said interstices and constituting a single, continuous, unitary phase.

4,642,256

LABEL STRIP

Yoshio Sato, Iwate, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Mar. 26, 1985, Ser. No. 715,776
Claims priority, application Japan, Sep. 6, 1982, 57-153978
Int. Cl.[4] B32B *3/10, 7/06*
U.S. Cl. 428—42 **11 Claims**



1. A strip of pressure-sensitive labels comprising an elongate web of support material with one surface for supporting labels thereon; label material including a series of labels, each label having an underside to which adhesive is applied and the individual labels being overlaid on the one surface of the support material and being peelable off the support material;

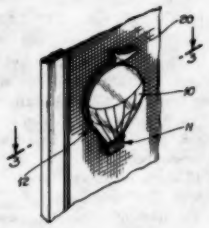
a plurality of feeding cut groups defined in the layer of support material at intervals longitudinally along the support material; each of the feeding cut groups comprising one longitudinal cut extending longitudinally along the web of support material and further comprising an upstream trasnsverse cut intersecting the longitudinal cut at the upstream end thereof with respect to the movement of the support material and a downstream stopper cut intersecting the longitudinal cut at the downstream end thereof wherein the upstream stopper cut extends transversely across the support material a greater distance than the downstream stopper cut; the said longitudinal cut and the transverse stopper cuts together defining two first feeding tongues in the support material at the opposite sides of the longitudinal cut between the stopper cuts; the labels on the support material having second feeding cuts defined therein and the second feeding cuts in the labels being shaped to define second tongues in the labels; the second cuts in the labels being positioned so that the second in the labels overlie respective first feeding tongues in the support material, such that upraising of first feeding tongues in the support material raises up corresponding second feeding tongues in a label overlying the upraised first feeding tongues.

4,642,257

MAGNETIC OCCLUDING DEVICE

Michael Chase, 6001 Amos Ave., Lakewood, Calif. 90712

Filed Jun. 13, 1985, Ser. No. 744,258
Int. Cl.[4] A61N *1/42;* B32B *35/00*
U.S. Cl. 428—63 **13 Claims**



1. A decorative magnetic occluding device for decoratively and uniformly occluding opposing surface portions of a non-magnetic panel comprising a matched pair of sheet magnets;

each being the mirror image configuration of the other;

each magnet having a decorative surface, which is a mirror image configuration of the decorative surface of the other magnet, and an opposite magnetized surface, said magnetized surfaces having alternating North and South stripes of polarity, the stripes of polarity of one of said magnetized surfaces being offset by one stripe from the corresponding stripes of polarity of the other of said magnetized surfaces; and

each magnet having visual orientation means for insuring that the corresponding stripes of polarity of said magnetized surfaces will be opposite in polarity when said magnets are mated on opposing surface portions of a non-magnetic panel with the decorative surfaces exposed.

4,642,258

TREATMENT OF FABRICS IN MACHINE DRYERS USING TREATING MEANS CONTAINING FABRIC TREATING COMPOSITION HAVING RESISTANCE TO CHANGE IN VISCOSITY AND RELEASE RATE WITH TEMPERATURE CHANGE

Donna M. Majewski, Lino Lakes, and Stephen A. Morganson, S. St. Paul, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

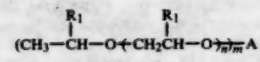
Filed Jul. 5, 1983, Ser. No. 510,943
Int. Cl.[4] B05D *1/28;* B65D *85/70;* F26B *3/00*
U.S. Cl. 428—68 **23 Claims**

1. A fabric treating article of commerce comprising:

(a) a dispenser body enclosing or substantially surrounding,

(b) a fabric conditioning composition consisting essentially of:

(i) about 20 to 80 wt-% of an alkoxylated compound having the formula:



wherein R_1 is hydrogen or C_{1-5} alkyl, A is an alkyl, a carboxyl, an aryl, a substituted aryl, or an alkylene glycol moiety having from about 1 to 30 carbon atoms, m is an integer of 1 to 4, and n is a number of about 100 to 1,000;

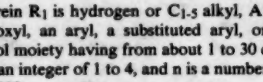
(ii) about 10 to 30 wt-% of a di C_{1-4} alkyl-di C_{5-24} alkyl ammonium compound;

(iii) about 8 to 12 wt-% silicon dioxide; and

(iv) about 0 to 5 wt-% of fragrance.

13. A fabric softening composition of matter which consists essentially of:

(i) about 20 to 80 wt-% of an alkoxylated compound having the formula:



wherein R_1 is a hydrogen or C_{1-5} alkyl, A is an alkyl, a carboxyl, an aryl, a substituted aryl, or an alkylene glycol moiety having from about 1 to 30 carbon atoms, m is an integer of 1 to 4, and n is a number of about 100 to 1,000;

(ii) about 10 to 30 wt-% of a di C_{1-4} alkyl-di C_{5-24} alkyl ammonium compound;

(iii) about 8 to 12 wt-% of silicon dioxide; and

(iv) about 0 to 5 wt-% of fragrance.

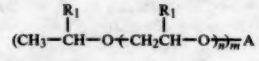
22. A method for forming a slow release fabric treating article of commerce which comprises:

(a) obtaining at least one piece of a woven or nonwoven fabric permeable to solid fabric treating compositions;

(b) attaching at least two edges of the fabric;

(c) introducing an effective amount of a fabric softening anti-static composition which consists essentially of:

(i) about 20 to 80 wt-% of an alkoxylated compound having the formula:



wherein R_1 is a hydrogen or C_{1-5} alkyl, A is an alkyl, a carboxyl, an aryl, a substituted aryl, or an alkylene glycol moiety having from about 1 to 30 carbon atoms, m is an integer of 1 to 4, and n is a number of about 100 to 1,000;

(ii) about 10 to 30 wt-% of a di C_{1-4} alkyl-di C_{5-24} alkyl ammonium compound;

(iii) about 8 to 12 wt-% of silicon dioxide; and

(iv) about 0 to 5 wt-% of fragrance;

and sealing the fabric, enclosing or substantially surrounding the fabric softening anti-static composition.

4,642,259

SOURCE-SIDE SELF-ALIGNED GATE PROCESS

William A. Vetanen, Hillsboro; Kimberly R. Gleason, Portland, and Irene G. Beers, Tigard, all of Oreg., assignors to Triquint Semiconductors, Inc., Beaverton, Oreg.

Filed Apr. 26, 1985, Ser. No. 727,485

Int. Cl.[4] **B32B** *3/10;* **G03C** *5/00;* **H01L** *21/00*

U.S. Cl. 428—137 **20 Claims**

1. A source side self-aligned gate process for fabricating an integrated circuit device comprising:

providing a substrate having a reference surface and an active device region in the material of the substrate;

masking the substrate surface over the active device region with an ion-opaque, removable first mask layer;

forming a pair of spaced-apart openings in the mask within the active device region;

implanting ions through the pair of openings into the active device region to form a pair of self-aligned implant regions spaced apart from a gap having a first length defined by the spacing of the openings;

depositing a first dielectric layer through the mask openings onto the substrate surface so as to cover the self-aligned implant regions;

removing the first mask layer and any of the first dielectric layer deposited thereon while leaving first and second spaced-apart dielectric patches covering the self-aligned implant regions and aligned therewith;

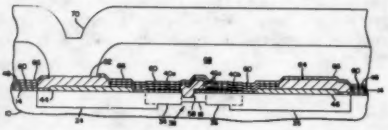
masking the substrate surface and the first and second dielectric patches with a second mask layer;

forming a single opening in the second mask layer in the active device region in a location and of a length encompassing a portion of said gap and an overlappingly intersecting an adjoining portion of the first patch;

depositing a second dielectric layer through said single mask opening onto the substrate;

removing the second mask layer and any of the second dielectric layer deposited thereon while leaving a third dielectric patch covering said portions of the gap and the first patch and spaced from the second patch to define a reduced gap therebetween;

depositing a gate conductor material in the gap to form a gate having a gate contact in contact with the substrate material in the reduced gap, the gate contact having a length defined by the spacing across the reduced gap between the second and third patches of dielectric material.



11. A gate process according to claim **1** including sizing the opening in the second mask layer so that the second length is greater than the first length.

15. A process according to claim **12** including:

depositing a fourth dielectric layer over said surface including over said first, second and third areas, the first and fourth dielectric layers each being formed of a dielectric material removable by a predetermined etchant and the second and third dielectric layers being formed of a different dielectric material resistant to said etchant;

masking the fourth dielectric layer with a mask layer and forming an opening in the mask layer approximately aligned with said first area; the mask layer being formed of a mask material resistant to said etchant and otherwise removable;

etching through the opening with said predetermined etchant to remove portions of the first and fourth dielectric layers exposed within the gap and thereby expose a portion of the reference surface of the substrate;

etching the exposed portion of the substrate surface so as to form, within the gap, a recess in the substrate having a predetermined depth from the reference surface;

depositing said conductive gate material through the opening into the gap and the recess; and

removing the mask material.

16. A source side self-aligned gate for making submicron gates in integrated circuits, comprising:

providing a semi-insulating substrate having a reference surface;

depositing a first dielectric layer over said surface;

applying a first layer of photoresist over the first dielectric layer and forming a pair of closely spaced apart openings

extending through the photoresist to expose a surface portion of the first dielectric layer through said openings;

doping a pair of areas of the substrate to define two implanted regions having implant boundaries substantially aligned with said openings and spaced apart to define a first gap between the regions;

depositing a second dielectric layer on the photoresist and within the openings atop the surface portion of the first dielectric layer exposed therein;

removing the first layer of photoresist, thereby removing any of the second dielectric layers deposited thereon and leaving a pair of areas of the second dielectric layer atop the first dielectric layer extending over the pair of implanted regions and having dielectric boundaries spaced closely apart in accordance with the spacing of the openings;

applying a second layer of photoresist over the first and second dielectric layers;

positioning and forming a first single opening extending through the second photoresist layer so as to expose a portion of only one of the pair of areas of the second dielectric layer and an adjoining surface portion of the first dielectric layer spaced apart within the first gap from the other of the pair of areas of the second dielectric layer;

depositing a third dielectric layer on the photoresist and the surface portions of the first and second dielectric layers exposed within the first single opening;

removing the second layer of photoresist, thereby removing the third dielectric layer deposited thereon and leaving an area of the third dielectric layer atop said exposed portions of the first and second dielectric layers, the second and third dielectric layers together extending over the pair of implanted regions and having dielectric boundaries spaced closely apart to define a second gap of reduced length in accordance with the spacing of the openings;

masking the surface with a mask layer and forming a second, single opening therethrough approximately in alignment with a portion of gap between the implanted regions to expose a surface of the first dielectric layer between said dielectric boundaries;

selecting for the first and third dielectric layers a material which is removable by a predetermined etchant and selecting for the mask layer and second dielectric layer materials which are resistant to said etchant;

etching through the second opening with the predetermined etchant selectively to remove the first dielectric layer and thereby expose a portion of the substrate bounded by the boundaries of said second dielectric layer;

etching the exposed portion of the substrate surface so as to form a recess, the substrate in the gap having a predetermined depth from the reference surface;

removing the mask material;

depositing a conductive gate material within at least the second gap and the recess.

4,642,260

SUBSTRATE FOR PLANOGRAPHIC PLATE

Kazuto Wakita; Kazuo Tsuchiya; Isao Nagayasu, and Ikuo Emoto, all of Sakai, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Mar. 14, 1985, Ser. No. 711,965

Claims priority, application Japan, Mar. 21, 1984, 59-52205

Int. Cl.[4] B32B *7/02, 15/08*

U.S. Cl. 428—215 **18 Claims**

1. A substrate for planographic plate, consisting essentially of metal foils with thicknesses of 5 to 100μ laminated onto both surfaces of a sheet which has a thickness of 30 to 400μ, said sheet being formed of a modified polyolefin composite material comprising 100 parts by weight of a modified polyolefin resin graft-modified partially or wholly with an organic silane compound and 5 to 150 parts by weight of mica.

4,642,261

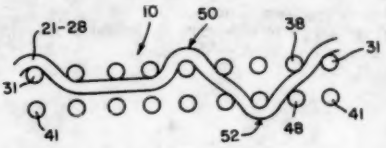
PAPERMAKERS FABRIC HAVING A TIGHT BOTTOM WEFT GEOMETRY

Ivan J. Fearnhead, Shreveport, La., assignor to Unaform Inc., Shreveport, La.

Filed Dec. 21, 1984, Ser. No. 685,129

Int. Cl.[4] D03D *3/00*

U.S. Cl. 428—225 **14 Claims**



1. A papermakers fabric comprising a duplex fabric having a plurality of machine direction yarns and cross-machine direction yarns interwoven in accordance with a desired weave pattern, a top layer defined by a first plurality of said cross-machine direction yarns and a bottom layer defined by a second plurality of said cross-machine direction yarns, said yarns of said second plurality having a higher heat shrinkage than said yarns of said first plurality and being contracted heat-shrinkable yarns after heat setting of the fabric.

4,642,262

METHOD OF MAKING FIBRIDS FROM THERMOPLASTICS

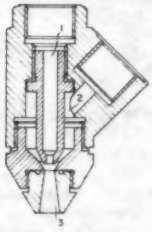
Bernhard Piotrowski, Lohmar; Robert Büning, Troisdorf; Bernhard Janser, Troisdorf, and Egon Lang, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Mar. 9, 1984, Ser. No. 588,058

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308626

Int. Cl.[4] B29B *9/00;* **D04H** *1/54*

U.S. Cl. 428—296 **9 Claims**



1. A method of making fibrids from thermoplastic synthetic substances comprising expanding by vaporization, in the presence of a gaseous propellant, a polymer solution, under elevated pressure and elevated temperature, in a mixing nozzle having a Laval discharge portion under shear-inducing conditions, wherein the true or apparent solution of the polymer in a solvent is expanded by the use of superheated steam at an average energy density of at least 50 watt-seconds per cubic centimeter in the mixing nozzle

8. An article produced according to the method of claim 1.

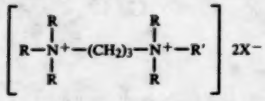
4,642,263
ANTISTAT COATED FILMS

Edwin C. Culbertson, Greer, S.C., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Dec. 18, 1984, Ser. No. 683,435
Int. Cl.[4] B32B 27/08, 27/36
U.S. Cl. 428—336 17 Claims

1. An oriented self-supporting plastic film having a thin continuous antistatic coating on one or both sides thereof, said coating comprising a mixture of:

(a) about 15% to about 50% by weight of a quaternary ammonium salt having the formula:



wherein:

R is a lower alkyl group having 1 to 3 carbon atoms;

R' is an alkyl or alkenyl radical having from about 8 to 20 carbon atoms;

X^- is an anion; and

(b) about 85% to about 50% by weight of a polymeric binder; said coating being present in an amount effective to provide a film having a surface resistivity not greater than about 10^{13} ohms.

4,642,264
THERMOSET POLYMERS AND PREPOLYMERS WITH RAPID CURING, OBTAINED BY POLYCONDENSATION OF PYRIDINE DERIVATIVES AND AROMATIC DIALDEHYDES AND ADDING OF PHENOLIC COMPOUNDS

Marcel Ropars, Rocquencourt, and Bertrand Bloch, Paris, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris and Office National d'Etudes et de Recherches Aerospatiales, Chatillon sous Bagneaux, both of, France

Filed Aug. 23, 1984, Ser. No. 643,811
Claims priority, application France, Sep. 13, 1983, 84 14547
Int. Cl.[4] C08G 14/06, 14/12
U.S. Cl. 428—367 15 Claims

1. A thermoset resin consisting at least in part of a product resulting from the polycondensation of at least one pyridine derivative containing at least two methyl groups in the 2, 4 and 6 positions, with at least one aromatic dialdehyde, and one additive which is at least one phenol compound, wherein the phenol compound is a member selected from the group consisting of:

(a) a monophenol which is hydroxybenzene, an alkylphenol substituted by one or more alkyl having 1 to 5 carbon atoms, unsubstituted aryl phenol or an aryl phenol substituted by one or more alkyl having 1 to 5 carbon atoms, a phenol containing 2 to 4 condensed aromatic rings;

(b) a polyphenol having 2, 3 or 4 phenol groups, said polyphenol being unsubstituted or substituted by (1) aryl group, (2) by one or more alkyl having 1 to 5 carbon atoms, (3) by a condensed ring and (4) by an alkyl of 1 to 5 carbon atoms and a condensed ring;

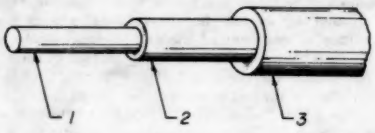
(c) a phenol substituted by one or more hydroxy, carboxy, amine or ether group, and

(d) a phenol polymer, said phenyl compound not containing isopropenyl groups.

4,642,265
COATING MATERIAL FOR OPTICAL COMMUNICATION GLASS FIBERS AND FIBERS MADE THEREFROM

Toshio Suzuki, Ichihara, Japan, assignor to Toray Silicone Co., Ltd., Tokyo, Japan

Filed May 11, 1983, Ser. No. 493,454
Claims priority, application Japan, May 11, 1982, 57-78702
Int. Cl.[4] D02G 3/00
U.S. Cl. 428—375 11 Claims



1. A silicone coating material for making an optical communication glass fiber having a cross-sectional structure comprising a glass fiber core covered with cured silicone coating material and the exterior of the silicone coating material covered with a thermoplastic resin coating material

comprising the product obtained by mixing

(a) a polyorganosiloxane represented by the average unit formula

$$R_aSiO_{4-a/2}$$

wherein each R represents a monovalent hydrocarbon radical or a halogenated monovalent hydrocarbon radical where at least 60 mol % of the radicals represented by R are methyl radicals and a has an average value in the range of 1.8 to 2.2, said polyorganosiloxane having at least two vinyl radicals per molecule,

(b) a polyorganohydrogensiloxane represented by the average unit formula

$$R_b'SiO_{4-b/2}$$

wherein each R' represents a hydrogen atom, a monovalent hydrocarbon radical, or a halogenated monovalent hydrocarbon radical where at least 40 mol % of the radicals represented by R' are methyl radicals and b has an average value in the range of 1.8 to 2.5, said polyorganohydrogensiloxane having at least two silicon-bonded hydrogen atoms per molecule and said polyorganohydrogensiloxane being present in an amount sufficient to give a molar ratio of silicon-bonded hydrogen atoms per vinyl radical in (a) of from 0.8/1 to 10/1,

(c) platinum or a platinum compound at 0.1 to 100 ppm as platinum metal based on the total weight of (a) and (b), and

(d) amorphous silica powder having an average primary particle size of no more than 0.2 μm, said silica powder being present in an amount of from 1 to 50 parts by weight per 100 parts by weight of the total weight of both (a) and (b).

4,642,266
NON-FOGGING COATING COMPOSITION AND A SHAPED ARTICLE COATED THEREWITH

Masaaki Funaki, Toyonaka; Noboru Ohtani; Motoaki Yoshida, both of Nishinomiya; Akira Fujioka, Osaka, and Kazuo Sakiyama, Ibaraki, all of Japan, assignors to Nippon Sheet Glass Co., Ltd. and Sumitomo Chemical Co., Limited, both of Osaka, Japan

Division of Ser. No. 724,178, Apr. 17, 1985, Pat. No. 4,594,379, which is a continuation of Ser. No. 268,106, May 28, 1981, Pat. No. 4,522,966. This application Mar. 10, 1986, Ser. No. 838,280

Claims priority, application Japan, May 29, 1980, 55-71747; May 29, 1980, 55-71748

Int. Cl.[4] B32B *27/36*

U.S. Cl. 428—412 **23 Claims**

1. A coated shaped article of a polycarbonate type resin combining resistance to wear and non-fogging property, which article comprises:

(I) a substrate of a polycarbonate type resin,

(II) layer of undercoat formed by applying to the surface of the substrate and allowing to cure thereon a composition containing a polymer selected from the group consisting of:

(i) a polymer possessing repeating structural units represented by the general formula (3):

(3)

wherein, R^6 and R^7 independently stand for a hydrogen atom, an alkyl group having 1 to 5 carbon atoms or a carboxyl group and Y stands for a side chain containing a carboxyl group, an amino group or an epoxy group and

(ii) a polymer possessing repeating structural units represented by the formula (4):

(4)

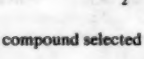
wherein, R^8 and R^9 independently stand for a hydrogen atom, a lower alkyl group or a carboxyl group and Z stands for a side chain containing a hydroxyl group and repeating structural units represented by the formula (5):

(5)

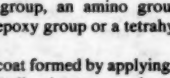
wherein, R^{10} and R^{11} independently stand for a hydrogen atom, a lower alkyl group or a carboxyl group and W stands for a side chain containing a carboxyl group, an alkoxy-carbonyl group, an amino group, a substituted amino group, an epoxy group or a tetrahydrofuryl group) and

(III) a layer of overcoat formed by applying to the surface of the undercoat and allowing to cure thereon a nonfogging coating composition, comprising:

(A) 0 to 50 parts by weight (calculated as



of at least one compound selected from the group consisting of epoxy group-containing organic silane compounds represented by the general formula (1):



(1)

wherein, R^1 stands for an organic group having an epoxy group, R^2 for a hydrogen atom, a hydrocarbon group having 1 to 6 carbon atoms or a vinyl group, R^3 for a hydrocarbon group having 1 to 5 carbon atoms, an alkoxy-alkyl group or an acyl group having 1 to 4 carbon atoms, a for an integer having the value of 1 to 3 and b for an integer having the value of 0 to 2, providing that $a+b \leqq 3$ is satisfied, and partial hydrolyzates thereof,

(B) 20 to 80 parts by weight of a polyhydric alcohol having an ethylene oxide chain,

(C) 10 to 75 parts by weight of a polymer or compolymer containing at least 20% by weight of repeating structural units represented by the general formula (2):

(2)

wherein, R^4 and R^5 independent by stand for a hydrogen atom, a lower alkyl group or a carboxyl group and X stands for a side chain possessing an epoxy group, and

(D) a catalytic amount of a curing catalyst, providing that the total of the amounts of the aforementioned components (A), (B) and (C) is 100 parts by weight.

4,642,267
HYDROPHILIC POLYMER BLEND

Walter S. Creasy, Bridgewater; Donald H. Lorenz, Basking Ridge; Robert G. LaCasse, North Plainfield, all of N.J., and Salvatore A. Malagreca, Staten Island, N.Y., assignors to Hydromer, Inc., Whitehouse, N.J.

Filed May 6, 1985, Ser. No. 731,111

Int. Cl.[4] B32B *27/38*; C08L *29/04*

U.S. Cl. 428—413 **20 Claims**

1. A stable hydrophilic polymer blend which consists essentially of a first polymer component which is an organic solvent-soluble, preformed, thermoplastic polyurethane having no reactive isocynate groups and a second polymer component which is a hydrophilic poly (N-vinyl lactam), said blend capable of withstanding exposure to water without significant loss of said hydrophilic poly (N-vinyl lactam).

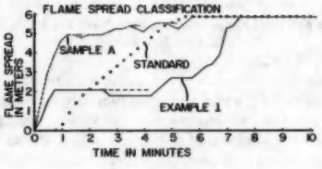
4,642,268
WOOD SUBSTRATE HAVING GOOD FLAME RESISTANCE

André St.-Michel, Lorraine, Canada, assignor to Domtar Inc, Montreal, Canada

Filed Oct. 4, 1985, Ser. No. 784,060

Int. Cl.[4] B32B *23/08*

U.S. Cl. 428—453 **8 Claims**



1. A roofing board of the type to be used for roofing with

elastomeric modified bituminous sheets selected from the group consisting of fiber board and wafer board, wherein said board is coated on its top surface with a coating consisting essentially of an inorganic water soluble silicate as the sole effective ingredient yielding flame resistance properties to said board, said coating being the sole coating on said roofing board, said coating serving to impregnate said roofing board and forming a firm bond with it, the strength of the bond between the silicate layer and the roofing board being substantially of the same order of magnitude as the strength of the bond maintaining the internal structure of the roofing board, said bond strength in shear being at least 100 kiloPascal, and said top surface of the roofing board, having the property to form on roofing with elastomeric modified bituminous sheets a bond strength of at least 100 kiloPascal.

4,642,269

CRYSTALLINE RANDOM PROPYLENE COPOLYMER COMPOSITION AND COMPOSITE LAMINATE COMPRISING SAID COMPOSITION

Masaki Kohyama, Ichihara; Takeshi Muranaka, Iwakuni; Kunisuke Fukui, Hiroshima, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd, Tokyo, Japan

Filed Oct. 29, 1985, Ser. No. 792,595

Claims priority, application Japan, Nov. 1, 1984, 59-228952; Nov. 1, 1984, 59-228953

Int. Cl.[4] C08J *5/18;* **C08L** *23/14, 23/16, 23/18*

U.S. Cl. 428—516 **22 Claims**

1. A crystalline random propylene copolymer composition comprising (i) a crystalline random propylene copolymer comprising 99 to 85 mole % of propylene and 1 to 15 mole % of an alpha-olefin other than propylene and (ii) a random 1-butene copolymer comprising 1-butene and an alpha-olefin having at least 5 carbon atoms, the weight ratio of the copolymer (i) to the copolymer (ii) being in the range of from 5:95 to 90:10, said random 1-butene copolymer (ii) satisfying the following conditions:

(A) it comprises 50 to 99 mle % of the 1-butene component and 1 to 50 mole % of the alpha-olefin,

(B) it has an intrinsic viscosity [η], measured in decalin at 135° C., of from 0.5 to 6 dl/g,

(C) it has a melting point [Tm], measured by a differential scanning calorimeter, of from 30° to 120° C.,

(D) it has a crystallinity, measured by X-ray diffractometry, of from 5 to 60%,

(E) the amount [W_1 in % by weight] of that portion of it which is soluble in boiling methyl acetate is not more than 2%, and

(F) the amount [W_2 in % by weight] of that portion of it which is soluble in a 1:1 by volume mixture of acetone and n-decane at 10° C. is less than $5\times[\eta]^{-1.2}$.

4,642,270

MAGNETIC RECORDING MEDIUM

Haruyuki Morita; Jiro Yoshinari, and Kazumasa Fukuda, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 27, 1984, Ser. No. 675,302

Claims priority, application Japan, Nov. 29, 1983, 58-223069

Int. Cl.[4] H01F *10/00*

U.S. Cl. 428—621 **5 Claims**

1. In a magnetic recording medium comprising a non-magnetic substrate and a magnetic thin film formed on the surface thereof, wherein the improvement comprises a magnetic thin film which is comprised of two layers, a first, crystalline layer deposited on said substrate, the surface opposite said substrate being amorphitized to give an amorphous surface, and a second crystalline layer deposited on said amorphous surface.

4,642,271

BN COATING OF CERAMIC FIBERS FOR CERAMIC FIBER COMPOSITES

Roy W. Rice, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1985, Ser. No. 700,246

Int. Cl.[4] B32B *9/00*

U.S. Cl. 428—698 **9 Claims**

1. In a ceramic fiber composite, a composition comprising:

a plurality of ceramic fibers;

a fiber coating of boron nitride disposed over each fiber to form a plurality of coated fibers; and

a ceramic matrix encapsulating said plurality of coated fibers.

4,642,272

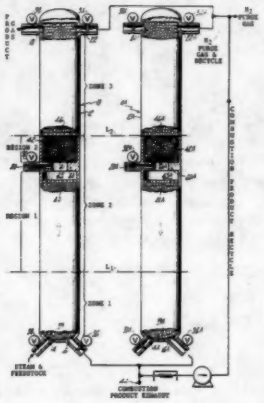
INTEGRATED FUEL CELL AND FUEL CONVERSION APPARATUS

Richard A. Sederquist, Newington, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Dec. 23, 1985, Ser. No. 812,212

Int. Cl.[4] H01M *8/06*

U.S. Cl. 429—17 **6 Claims**



1. Reaction apparatus constructed to alternately:

(a) make a hydrogen containing gas by the cracking and catalytic steam reforming of a hydrocarbon feedstock; and

(b) be regenerated, comprising: at least one reaction vessel having an upstream end and downstream end, said vessel having disposed therein, in sequence from its upstream to downstream end, a first volume of inert packing material containing no reform catalyst, a second volume of material substantially adjacent said first volume and including a region of reform catalyst material and a third volume of material substantially adjacent said second volume;

said vessel including first inlet means upstream of said second volume for introducing a hydrocarbon feedstock and steam into said first volume during the making of the hydrocarbon containing gas, and first outlet means at said downstream end of said vessel for exhausting the hydrogen containing gas produced in the vessel;

said vessel including second inlet means at its downstream end for introducing a hydrogen purge gas into said third volume during the regeneration of the apparatus, and second outlet means at said upstream end for exhausting combustion product gases produced during regeneration;

said second inlet means including third inlet means for introducing a portion of said combustion product exhaust gases produced during regeneration into said vessel; and

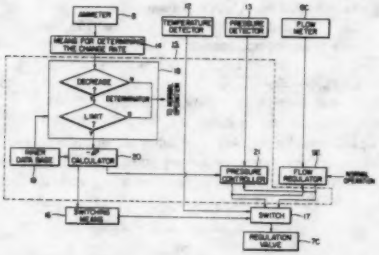
said vessel including fourth inlet means within said second volume of material located upstream of said region of reform catalyst for introducing an oxygen containing gas.

4,642,273

REFORMER REACTION CONTROL APPARATUS FOR A FUEL CELL

Akira Sasaki, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 612,020, May 18, 1984, abandoned. This application Jun. 13, 1985, Ser. No. 744,294
Claims priority, application Japan, May 19, 1983, 58-89367
Int. Cl.[4] H01M *8/04*
U.S. Cl. 429—22 **2 Claims**



1. A control system for a reforming reaction comprising a fuel reforming means, said reforming being carried out by an endothermic reaction, a feed flow control system for controlling, depending upon an external load, the quantities of fuel gas and steam which are each introduced into said reforming means, a reformed gas flow control system for controlling, depending upon said external load, the quantity of reformed gases discharged from said fuel reforming means, a means for determining change rate of the load, a means for detecting a pressure in the fuel reforming means and a reaction pressure control means by computing a transistional pressure preset value in the fuel reforming means on the basis of signals from said means for determining load change ratio and from said means for detecting pressure, said reaction pressure control means having a reaction pressure control system by which the pressure in the fuel reforming means is controlled transistionally below a steady state pressure preset value when said change rate of the load is outside a predetermined range.

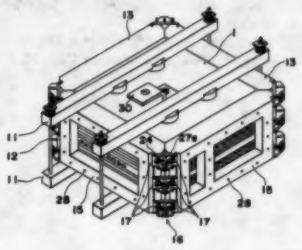
4,642,274

FUEL CELL SYSTEM

Masaru Tsutsumi, Hyogo; Hideo Hagino, Otsu; Osamu Fujiwara, Takasago, and Hitoshi Goto, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Nov. 12, 1985, Ser. No. 796,333
Claims priority, application Japan, Nov. 12, 1984, 59-238113
Int. Cl.[4] H01M *8/04*
U.S. Cl. 429—35 **4 Claims**

1. A fuel cell stack and manifolds sealing system comprising rigid frames provided at their peripheries with grooves extending in the stacked direction of the fuel cell components and fastening means for uniting said frames, each said fastening means comprising a pair of angle members each having a hook at its one end and being preassembled with elastic washers and a clamping bolt extending through said pair of angle members and said washer and a nut on said bolt, said hooks of the angle



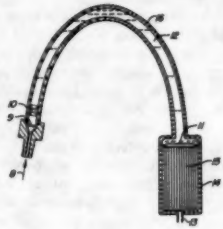
members of each pair engaging the grooves of the adjacent frames.

4,642,275

MOVING PISTON SEAL ACTIVATOR

David F. Smith, Boulder Creek, and J. Pierre Wilson, San Jose, both of Calif., assignors to Altus Corporation, San Mateo, Calif.

Filed Feb. 10, 1986, Ser. No. 827,508
Int. Cl.[4] H01M *10/44*
U.S. Cl. 429—52 **12 Claims**



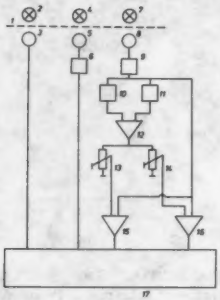
1. A reserve battery cell comprising
a. a battery cell housing,
b. an anode and a cathode collector located within said housing,
c. a quantity of electrolyte which, when applied to said anode and cathode collector, can cause the battery to generate an electric current through an external load,
d. a reservoir housing for storing said electrolyte prior to its application to said anode and cathode,
e. upstream and downstream burst discs located proximate the extremities of said reservoir housing, said upstream burst disc being capable of rupturing upon the application of efficient externally applied pressure and said downstream burst disc being capable of rupturing upon the application of sufficient hydraulic pressure exerted thereon by said electrolyte, and
f. piston means located within said reservoir housing in establishing the upstream boundary of said electrolyte and which is further capable of traveling down said reservoir housing upon the application of said externally applied pressure and which is further characterized as substantially preventing electrolyte from leaking around the piston means and any substantial amount of gas from entering the electrolyte through the piston body.

4,642,276

METHOD OF ASSESSING THE ACTIVITY OF A PHOTOGRAPHIC DEVELOPER

Jean Burtin, Mol, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Sep. 26, 1985, Ser. No. 780,586
Claims priority, application European Pat. Off., Oct. 4, 1984, 84201412.8
Int. Cl.[4] G03C 5/02, 5/26
U.S. Cl. 430—30 9 Claims



1. A method of assessing the developing activity of a photographic developer relative to a norm, which method comprises the steps of using the developer to develop a latent photographic image of a sensitometric wedge, determining density curve data pertaining to the resulting wedge print (hereinafter and in subsequent claims called "control print") by means of a photoelectric transmission densitometer, and comparing such data with analogous data pertaining to at least one reference wedge print resulting from the development of an identical latent sensitometric wedge image in a developer of given activity taken as norm, characterised in that the densitometer is used to determine in respect of the control print: (i) a notional density range in terms of the difference between the dark current of the photodetector of the densitometer and the output current of such detector when it is irradiated by light through the transparent support of such control print at an area of zero image density, and (ii) to determine at least one position along the control print where its image density, as measured in terms of the output current of said detector, is in a predetermined ratio to said notional density range; the data thus established pertaining to the control print is compared with analogous data pertaining to the reference print, established by means of the same densitometer, in order to determine the relationship between the positions along the control and reference prints at which their notional densities are in the same ratio to their respective notional density ranges, and the said relationship is used as a measure of the developing activity of the developer being assessed.

4,642,277

PHOTOCONDUCTIVE MEMBER HAVING LIGHT RECEIVING LAYER OF A-GE/A-SI AND C

Keishi Saitoh; Yukihiko Ohnuki, and Shigeru Ohno, all of c/o Canon Kabushiki Kaisha, 30-2, 3-chome,, Shimomaruko, Ohta-ku, Tokyo, Japan

Filed Oct. 23, 1984, Ser. No. 663,965
Claims priority, application Japan, Oct. 25, 1983, 58-200563; Dec. 28, 1983, 58-252044; Dec. 28, 1983, 58-252045
Int. Cl.[4] G03G 5/085
U.S. Cl. 430—57 73 Claims

1. A photoconductive member, having a substrate for photoconductive member and a light-receiving layer having photoconductivity with a layer constitution in which a first layer region (G) comprising an amorphous material containing germanium atoms and from 0.01 to 40 atomic percent of at least one of hydrogen or halogen atoms and a second layer region (S) exhibiting photoconductivity comprising an amorphous material containing silicon atoms and from 1 to 40 atomic percent of at least one of hydrogen or halogen atoms are successively provided from the aforesaid substrate side, said light-receiving layer containing carbon atoms together with a substance (C) for controlling conductivity in a distribution state such that in said light-receiving layer, the maximum value $C(PN)_{max}$ of the distribution concentration of said substance (C) in the layer thickness direction exists within said second layer region (S) and, said substance (C) is in distributed in greater amount on the side of said substrate.

4,642,278

PHOTOSENSITIVE MEMBER WITH AN INSULATING LAYER OF AMORPHOUS SILICON

Yukio Tanigami, Amagasaki; Shuji Iino, Itami, and Mitsutoshi Nakamura, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1985, Ser. No. 753,596
Claims priority, application Japan, Jul. 14, 1984, 59-146198
Int. Cl.[4] G03G 5/14
U.S. Cl. 430—66 6 Claims

1. A photosensitive member which comprises:
a conductive substrate;
a photoconductive layer of amorphous silicon; and
an insulating layer of amorphous silicon formed on said photoconductive layer and including at least carbon and an element in Group IIA of the Periodic table.

4,642,279

PHOTOSENSITIVE MEMBER WITH AN INSULATING LAYER OF AMORPHOUS SILICON

Yukio Tanigami, Amagasaki; Shuji Iino, Itami, and Mitsutoshi Nakamura, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1985, Ser. No. 753,588
Claims priority, application Japan, Jul. 14, 1984, 59-146199
Int. Cl.[4] G03G 5/14
U.S. Cl. 430—66 9 Claims

1. A photosensitive member which comprises:
a conductive substrate;
a photoconductive layer including amorphous silicon and having a thickness of about 10 to 100 microns; and
an insulating layer formed on said photoconductive layer and including amorphous silicon, carbon and an element in Group III A of the Periodic Table, said carbon being included in an amount of about 35 to 65 atomic % at the outermost surface of said insulation layer and the amount is minimum at the boundry with said photoconductive layer, and said Group III A element being included to control a majority carrier of said layer to be a polarity opposite to the polarity of charging.

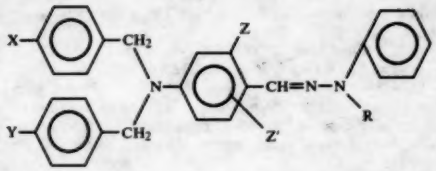
4,642,280

ELECTROPHOTOGRAPHIC PHOTORECEPTORS CONTAINING HYDRAZONE COMPOUNDS AS CHARGE-TRANSFER AGENTS

Hideaki Ueda, Kawanishi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 29, 1985, Ser. No. 738,999
Claims priority, application Japan, May 31, 1984, 59-112568
Int. Cl.[4] G03G 5/06
U.S. Cl. 430—73 7 Claims

1. An electrophotographic photoreceptor which includes a photosensitive layer that comprises a phthalocyanine photoconductive powder and a hydrazone compound represented by the general formula (I) in the photosensitive layer:



[I]

wherein X and Y independently represent a hydrogen atom or a lower alkyl, methoxy or ethoxy group, Z represents a lower alkyl, benzyl, hydroxyl, lower alkoxy, phenoxy or benzyloxy group, Z' represents a hydrogen atom or an alkyl or alkoxy group, and R represents a methyl, phenyl, benzyl or methoxyphenyl group.

4,642,281

ENCAPSULATED ELECTROSTATOGRAPHIC TONER MATERIAL

Fujio Kakimi, and Takeshi Mikami, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1984, Ser. No. 592,911

Claims priority, application Japan, Mar. 23, 1983, 58-48418

Int. Cl.[4] G03G *9/16*

U.S. Cl. 430—138 **2 Claims**

1. An encapsulated electrostatographic toner material comprising a core and a shell enclosing the core, in which:

said core comprises a polymer, a solvent having a boiling point of not lower than 180° C. selected from the group consisting of phthalic acid esters, phosphoric acid esters, diarylalkanes and alkylnaphthalenes, which is capable of dissolving the polymer or causing the polymer to swell, a colorant and a particulate magnetizable substance hydrophobically treated or coated on the surface; and

said shell is prepared by an in-situ inner or outer polymerization process.

4,642,282

LIGHT-SENSITIVE POSITIVE COPYING MATERIAL WITH ALKALI SOLUBLE POLYCONDENSATION BINDER

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

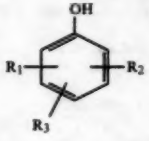
Filed Jun. 20, 1984, Ser. No. 622,446

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323343

Int. Cl.[4] G03C *1/60, 1/94;* G03F *7/08*

U.S. Cl. 430—165 **19 Claims**

1. Light-sensitive copying material comprising an aluminum support having a surface that is pretreated by being electrochemically roughened and anodically oxidized and a positive-acting, light-sensitive layer provided on said surface, which light-sensitive layer is comprised of (A) an amount of a positive-acting light-sensitive compound sufficient to impart light-sensitivity to said mixture and (B) a binder which is insoluble in water and soluble in aqueous-alkaline solutions, wherein said binder comprises a polycondensation product of (i) a phenol corresponding to the formula



wherein

R_1 is a hydrogen atom, an alkyl group or a hydroxy group,

R_2 is a hydrogen atom, an alkyl group, a hydroxy group or an acetyl group, and

R_3 is a hydrogen atom or a halogen atom, an alkyl group, an alkoxy group, a carboxyl group or a carboxylic acid ester group,

and (ii) a compound corresponding to the formula

$$ROCH_2—X—CH_2OR,$$

wherein

R is a hydrogen atom, a methyl group, an ethyl group or an acetyl group and

X is a phenylene group or a divalent aromatic group which comprises two phenylene groups linked by (a) a single bond, (b) an ether group, (c) a sulfide group, (d) a sulfone group, or (e) an alkylene group, and which may be unsubstituted or substituted.

4,642,283

PLATE MAKING PROCESSING FOR USING NEGATIVE WORKING LIGHT-SENSITIVE LITHOGRAPHIC PLATE REQUIRING NO DAMPENING SOLUTION

Hiroshi Takahashi; Yasuhisa Narutomi; Yoshimasa Aotani, and Keisuke Shiba, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1985, Ser. No. 711,861

Claims priority, application Japan, Mar. 14, 1984, 59-48307

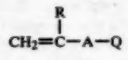
Int. Cl.[4] G03F *7/08*

U.S. Cl. 430—303 **6 Claims**

1. A plate making process which comprises the steps of:

(i) imagewise exposing a negative working light-sensitive lithographic plate requiring no dampening solution to light so as to obtain an exposed part and a non-exposed part, wherein said plate comprises a support having in sequence thereon,

(A) a light-sensitive layer containing, in admixture, (1) an o-quinonediazide compound; and (2) a coupling component which causes a diazo coupling reaction with said o-quinonediazide compound under a basic environment, wherein said coupling component is employed in an amount that the amount of coupling residue thereof is in a range of 0.05 to 10 equivalents per equivalent of the o-quinonediazide compound contained in the light-sensitive layer, wherein the o-quinonediazide is employed in an amount of from 30 to 95 wt% based on the total weight of the light-sensitive layer and wherein said coupling component comprises polymers having coupler residues in the side chains thereof, wherein said polymers are copolymers composed of (a) at least one monomer selected from acrylic acid esters, methacrylic acid esters and maleic acid esters and (b) a monomer represented by formula (I) below:



(I)

wherein R is a hydrogen atom or methyl group, A is —COO—, —O— or —CONH—, and Q is an azo coupling residue which forms an azo dye by causing a coupling reaction with an o-quinonediazide compound under a basic environment, and

(B) a silicone rubber layer,

(ii) developing the resulting imagewise exposed plate with a developer so as to remove only the silicone rubber layer or both the silicone rubber layer and the light-sensitive layer of the exposed part and thus expose the surface of the light-sensitive layer, a primer layer or the support so as to obtain a lithographic plate requiring no dampening solution, and

(iii) at any stage after imagewise exposure, treating said plate

with a sufficient amount of basic compound such that the o-quinonediazide compound in the non-exposed part causes a coupling reaction with the coupling component and as a result the non-exposed part does not change even if exposed to light after plate making.

4,642,284

METHOD AND SYSTEM FOR DETECTION OF COMPLEMENT PATHWAY ACTIVATION

Neil Cooper, San Diego, and James T. Mayes, La Jolla, both of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Filed Jun. 13, 1983, Ser. No. 503,705

Int. Cl.[4] G01N *53/00, 33/563*

U.S. Cl. 435—7 **56 Claims**

1. An assay method for an activated complex of the complement system comprised of a first complement componment of the complex and second complement component of the complex the assay method to be performed on a sample and comprising the steps of:

binding a first specific binding agent to any first complement component forming part of the complex present in the sample;

binding a second specific binding agent to any second complement component forming part of the complex, the second specific binding agent including a label, the first and second specific binding agents bound to the complex forming an aggregate; and

determining the presence of label bound as part of the aggregate.

4,642,285

SANDWICH EIA FOR ANTIGEN

Seymour P. Halbert, Miami, and Milton Anken, N. Miami Beach, both of Fla., assignors to Diamedix Corporation, Miami, Fla.

Continuation of Ser. No. 617,743, Sep. 29, 1975, Pat. No. 4,474,878. This application May 2, 1984, Ser. No. 606,122

The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.

Int. Cl.[4] G01N *33/53, 33/535, 33/545, 33/576*

U.S. Cl. 435—7 **18 Claims**

1. A method for detecting an antigen in a test serum containing said antigen, comprising the steps of:

a. providing a first quantity of an antibody associated with an antigen, said first quantity of said antibody being covalently bound to a water-insoluble, water insuspensible, solid carrier;

b. contacting and incubating a test serum containing said antigen with said antibody covalently bound to said water-insoluble, water-insuspensible solid carrier of step (a) whereby said antigen reacts with said antibody covalently bound to said solid carrier to immobilize said antigen;

c. providing a solution of a second quantity of said antibody, said second quantity of said antibody being covalently linked to an enzyme;

d. contacting and incubating said immobilized antigen resulting from step (b) with said solution of enzyme-linked antibody of step (c) whereby said enzyme-linked antibody reacts with said immobilized antigen to immobilize said enzyme-linked antibody;

e. separating the solid carrier from the solution of enzyme-linked antibody;

f. contacting and incubating said immobilized enzyme-linked antibody with a substrate solution wherein said enzyme linked to said antibody catalyzes a reaction of said substrate and produces a detectable reaction product; and

g. correlating said detectable reaction product to the presence of said antigen to be detected.

4,642,286

COMPOSITION AND METHOD FOR ETHANOL DETERMINATION

Mervin J. Moldowan, 480 Benton View Dr., Philomath, Oreg. 97370

Filed May 7, 1984, Ser. No. 607,827

Int. Cl.[4] C12Q *1/26, 1/28;* **C12N** *9/96, 9/99*

U.S. Cl. 435—25 **8 Claims**

1. A method for determining the level of ethanol in a fluid or air comprising exposing absorbent material to said fluid or air, the absorbent material being impregnated with a composition comprising:

(a) An indicator solution comprising orthotolidine, a yellow dye, ethanol and tris(hydroxymethy)-aminomethane/-sodium phosphate buffer solution and

(b) an enzyme solution comprising dextran, sodium chloride, peroxidase, alcohol oxidase, semicarbazide hydrochloride and a tris(hydroxymethyl)-aminomethane/sodium phosphate buffer solution said dextran and sodium chloride being present in amounts sufficient to stabilize the alcohol oxidase and the semicarbazide hydrchloride being present in an amount sufficient to inhibit said alcohol oxidase.

4,642,287

PROCESS FOR PRETREATING BIOMASSES IN ADVANCE OF THEIR ENZYMATIC TREATMENT

Takeshi Inoi, Yokohamashi; Toshiaki Akabane, Tokyo; Yasuhiro Kurokawa, and Shingo Matsuoka, both of Yokohamashi, all of Japan, assignors to Shinnenryoyu Kaihatsug/jutsu Kenkyukumiai, Tokyo, Japan

Filed Apr. 5, 1984, Ser. No. 596,937

Claims priority, application Japan, Apr. 14, 1983, 58/65896; Apr. 14, 1983, 58/65897

Int. Cl.[4] C12P *19/14, 19/02;* **B01J** *3/00;* **C13K** *1/02*

U.S. Cl. 435—99 **12 Claims**

1. In the process of pretreating a biomass in advance of cellulose enzymatic treatment that includes contacting the biomass in finely divided form with an aqueous solution of an alkaline compound, the improvement comprising reducing the pretreatment time to one minute or less by introducing the biomass and the alkaline compound into a biaxial extruder and carrying out the pretreatment in said biaxial extruder.

4,642,288

PROCESS FOR PRODUCING THERMOSTABLE ALPHA-AMYLASES BY CULTURING MICRO-ORGANISMS AT ELEVATED TEMPERATURES

María-Fe Elia De Miguel, La Moraleja; Pedro Miró Roig, and Eulalia Pares Olivet, both of Madrid, all of Spain, assignors to Compania Espanola de Petroleos, S.A., Spain

Filed Jul. 16, 1984, Ser. No. 630,958

Claims priority, application Spain, Oct. 11, 1983, 526.406

Int. Cl.[4] C12P *19/14;* **C12N** *9/28;* **C12R** *1/07*

U.S. Cl. 435—99 **8 Claims**

1. A process for producing thermostable α-amylases by culturing micro-organisms at elevated temperatures comprising the aerobic submerged culturing of a strain selected from the micro-organisms Bacillus sp. NCIB 11887 or NCIB 11886, or any of the mutants thereof, in a suitable culture medium and recovering the thusly produced enzyme from the culture broth.

4,642,289

PROCESS FOR CELL DISRUPTION

Peter R. Betteridge, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 21, 1984, Ser. No. 642,915

Claims priority, application United Kingdom, Aug. 26, 1983, 8323058

Int. Cl.[4] C12P *19/04;* **C12N** *1/06, 1/20*

U.S. Cl. 435—101 **5 Claims**

1. A process for disrupting cells of polysaccharide-produc-

ing microorganism Pseudomonas sp. NCIB 11592 which contain one or more RP4 or RP4::Mu_D plasmids with an anionic surfactant which comprises contacting said cells with a surfactant for a time and under conditions sufficient to lyse said cells and recovering a substantially cell-free polysaccharide from said cell lysate.

4,642,290

PROCESS FOR PREPARING A COMPOUND FOR USE IN THE PRODUCTION OF L-CARNITINE

Charles J. Sih, 6322 Landfall Dr., Madison, Wis. 53705

Filed Dec. 6, 1982, Ser. No. 447,171
Int. Cl.[4] C12P *13/00, 13/02, 7/52, 7/62*
U.S. Cl. 435—128 16 Claims

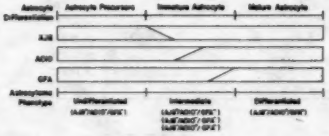
1. A method for preparing optically active R-4-substituted -3-hydroxybutyric acid derivatives from a substrate consisting of corresponding 4-substituted acetoacetic acid esters or amides, wherein the ester or amide group comprises at least five carbon atoms, which comprises subjecting said 4-substituted acetoacetic acid esters or amides to the fermentative enzymatic action of a microorganism which elaborates oxido-reductase enzymes to cause the substrate to be converted to the desired R-4-substituted-3-hydroxybutyric acid derivative; and recovering the desired optically active R-4-substituted-3-hydroxybutyric acid derivatives.

4,642,291

CELL SURFACE ANTIGENS OF HUMAN ASTROCYTOMA

J. Gregory Cairncross, London, Canada; M. Jules Mattes, Jamaica Estates, N.Y.; H. Richard Beresford, Centre Island, N.Y.; Anthony P. Albino; Alan N. Houghton, both of New York, N.Y.; Kenneth O. Lloyd, Bronx, N.Y., and Lloyd J. Old, New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,861
Int. Cl.[4] C12N *5/00, 15/00;* C12P *21/00;* C12R *1/91*
U.S. Cl. 435—240 8 Claims



1. Two or more monoclonal anbibodies capable of restricted and non-restricted binding to two or more human astrocytoma cell antigens and capable of subsetting malignant human astrocytoma cells into successive differentiation states wherein said restricted monoclonal antibody is selected from the group consisting of AJ8, AJ225, A010, A050, A092 and A0122 and said non-restricted monoclonal antibody is selected from the group consisting of AJ2, AJ9, AJ10, AJ17, AJ60 and AJ425, and wherein said monoclonal antibody is capable of subsetting human astrocytomas into antibody binding classes selected from the group consisting of: AJ8 positive/A010 negative/GFA negative, AJ8 negative/A010 positive/GFA positive and AJ8 negative/A010 positive/GFA negative.

4,642,292

METHOD FOR ISOLATION OF CONNECTIVE TISSUE BIOMATRIX

Lola C. M. Reid, Rye, N.Y., and Marcos Rojkind, Ciudad Satelite, Mexico, assignors to Albert Einstein College of Medicine of Yeshiva University, a division of Yeshiva University, Bronx, N.Y.

Continuation of Ser. No. 307,311, Sep. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 89,167, Oct. 29, 1979, Pat. No. 4,352,887. This application Jun. 6, 1983, Ser. No. 499,675
Int. Cl.[4] C12N *5/00*
U.S. Cl. 435—240 12 Claims

1. A method for the preparation, isolation and use of connective tissue-derived fibers as a substrate in a cell culture of viable and functional differentiated cells comprising the steps of:

a. dispersing tissue to form a suspension of connective tissue-derived fibrous solids;

b. separating the connective tissue-derived fibrous solids out of the suspension of step a and adding said solids to a delipidation solution;

c. separating the connective tissue-derived fibrous solids out of the solution of step b and adding said solids to a saline solution containing DNase and Ribonuclease;

d. separating the connective tissue-derived fibrous solids out of the solution of step c;

e. rinsing said connective tissue-derived fibrous solids, first with a saline solution and then with the solution to be used in the cell culture; and

f. utilizing the connective tissue-derived fibrous solids of step e as a substrate in a cell culture of viable and functional differentiated cells.

4,642,293

NOVEL HYBRIDOMA CELL LINE PRODUCING MONOCLONAL ANTIBODIES AGAINST LAMININ AND A PROCESS FOR THE PRODUCTION THEREOF

Albert E. Chung, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Mar. 24, 1983, Ser. No. 478,293
Int. Cl.[4] C12N *5/00;* C07K *15/04*
U.S. Cl. 435—240 3 Claims

1. The composition assigned ATCC Accession Number HB 8210 comprising a hybrid continuous cell line that produces a monoclonal antibody of the IgG type to the glycoprotein GP-2, a subunit of the basement membrane component laminin, said cell line comprising a spleen cell from a Lewis rat, immunized with a M-1536-B3 basement membrane component that contains the GP-2 antigen, fused with a mouse SP2/0-Ag14 myeloma cell.

4,642,294

PROCESS FOR EVALUATING THE STATE OF THE SURFACE OF KERATINOUS FIBRES AND A COMPOSITION FOR MAKING USE OF THIS PROCESS

Jean-Claude Arnaud, Paris, and Pierre Boré, Montfermeil, both of France, assignors to L'Oreal, Paris, France

Filed Jan. 10, 1986, Ser. No. 817,604
Claims priority, application France, Jan. 16, 1985, 85 00566
Int. Cl.[4] G01N *31/00*
U.S. Cl. 436—5 24 Claims

1. A process for evaluating the state of the surface of keratinous fibres, comprising the steps of:

(a) selecting a compound having an overall spatial size equal to the maximum dimension of the interstices present at the surface of the keratinous fibres, said compound being capable of dissolving in an aqueous medium, to form a colored solution or a solution capable of being colored by a development, said compound also being stable under the conditions of application of the process, and capable of being maintained at a pH such that no ionic charge appears;

(b) preparing an aqueous immersion solution containing said compound;

(c) immersing a specimen of the keratinous fibres whose surface state is to be evaluated in said immersion solution to permit said fibres to "take up" an amount of said compound which amount is a function of the state of the surface of the latter;

(d) withdrawing said specimen from said immersion solution and removing the excess of said immersion solution saturating the fibres by quick washing or dewatering;

(e) extracting said compound from the said specimen by immersing said specimen in at least one aqueous bath whose pH is substantially identical to that of said immersion solution, to produce an extract solution which is correspondingly colored or capable of being colored by a development;

(f) where necessary, developing the color of the extraction solution; and

(g) deducing the state of the surface of said fibres from the quantity of said compound present in said extract solution.

4,642,295

METHODS OF DETERMINING FRUCTOSAMINE LEVELS IN BLOQD SAMPLES

John R. Baker, 25 Dell Avenue, Remuera, Auckland, New Zealand

Filed Dec. 15, 1982, Ser. No. 450,149

Claims priority, application New Zealand, Dec. 23, 1981, 199380

Int. Cl.[4] G01N *33/66, 33/68*

U.S. Cl. 436—87 **17 Claims**

1. A method of determining the level of fructosamine in a blood sample or sample derived from blood wherein the level of fructosamine reflects an average serum glucose level in the sample over a period of time, said method comprising the steps of maintaining the sample at a controlled temperature below 5° C., controlling the pH of the sample to a value between 10 and 11, adding a colouring agent to the sample and after a first delay in time taking a first colour measurement at a predetermined wavelength and after a second delay in time taking a second colour measurement at the predetermined wavelength and determining the fructosamine level in said sample by comparing any resultant change between said first and second colour measurements with those of standard solutions wherein the colouring agent, timing of the delays wavelength and pH conditions selected such that any change of colour in the colouring agent between said first and second colour measurements is caused predominantly by glucose in the sample that is reacted or associated with an amine group of protein and has undergone a molecular re-arrangement to form fructosamine and not materially by any non-specific reducing substances which may be present in the sample.

4,642,296

METHOD OF MEASURING THE MAGNITUDE OF AN ENVIRONMENTAL PARAMETER, ESPECIALLY THE CONCENTRATION OF AN EXPLOSION-GENERATING GAS IN A SUBTERRANEAN ATMOSPHERE

Hans J. Hubner, Katthagen 24, 4400 Münster, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 635,329

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1983, 3327154

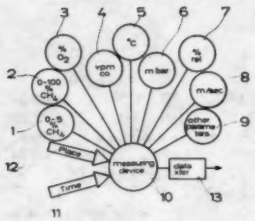
Int. Cl.[4] G01N *33/00*

U.S. Cl. 436—138 **3 Claims**

1. A method of determining the concentration of methane in a mine-ventilation current or other closed-system atmosphere, the atmopshere comprising, apart from methane and some elements in negligible concentrations, only nitrogen and oxygen, a correlation between the concentration of methane added to said atmosphere and the concentration of oxygen in said atmosphere being known from a law equating oxygen concentration with addition of methane to atmospheric air, which comprises the steps of:

at concentrations of methane of up to a threshold value of about 5% of methane measuring the concentration of methane in said atmosphere directly; and

at concentrations of methane above said threshold value, discontinuing the direct measurement of the concentration of methane,



measuring the concentration of oxygen in said atmosphere,

mathematically determining from said correlation the concentration of methane as correlated to the measured concentration of oxygen, and

using the mathematically determined value of the concentration of methane instead of the directly measured value.

4,642,297

OPTICAL GLASS WITH REFRACTIVE INDEXES OF 1.60–1.69 AND ABBE NUMBERS OF AT LEAST 54 WITH PARTICULARLY LOW DENSITY AND PARTICULARLY GOOD CHEMICAL STABILITY

Karl Mennemann, Taunusstein, and Danuta Grabowski geb. Marszalek, Wiesbaden, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Fed. Rep. of Germany

Filed Jan. 17, 1983, Ser. No. 458,506

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201943

Int. Cl.[4] C03C *3/08, 3/30*

U.S. Cl. 501—78 **2 Claims**

1. An optical quality crown glass having a refractive index of about 1.6410, an Abbe number of about 60.10, an acid resistance of class SR 53 and a density of about 2.97 g/cm^3 and consisting essentially of the following composition, in percent by weight:

SiO_2	8.60 percent
B_2O_3	49.25 percent
$SiO_2 + B_2O_3$	57.85 percent
CaO	27.80 percent
La_2O_3	13.10 percent
ZrO_2	1.25 percent.

4,642,298

COMPOSITE NITRIDE SINTERED BODY

Nobuyuki Kuramoto, Sagamihara; Kazuya Takada, Tokyo, and Yoshihiko Numata, Fujisawa, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Mar. 13, 1985, Ser. No. 711,215

Claims priority, application Japan, Mar. 15, 1984, 59-48092

Int. Cl.[4] C04B *35/58*

U.S. Cl. 501—96 **11 Claims**

1. A composite nitride sintered body having good machinability and consisting essentially of aluminum nitride, hexagonal boron nitride and at least one metal compound selected from the group consisting of compounds of metals of calcium, strontium, barium, yttrium and lanthanides, said composite

nitride sintered body having a density at least 90% of its theoretical density, the amount of aluminum nitride being 60 to 95% by weight, and the amount of boron nitride being 40 to 5% by weight, both based on the total weight of aluminum nitride and boron nitride, and the amount of at least one of said metal compounds as the oxide of the metal of the highest atomic valence being 0.01 to 5% by weight based on the weight of the composite nitride sintered body.

4,642,299

SILICON NITRIDE HAVING LOW DIELECTRIC LOSS

Martin Y. Hsieh, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 721,118, Apr. 8, 1985. This application Jun. 27, 1985, Ser. No. 749,329

Int. Cl.[4] C04B *35/58;* **H01Q** *1/42*

U.S. Cl. 501—97 **2 Claims**

1. A sintered silicon nitride based ceramic dielectric of at least about 99% theoretical density suitable for use in high temperature radome applications and which consists of a sintering aid, a low dielectric loss promoter and the balance silicon nitride, containing from about 4% by weight to about 16% by weight of a sintering aid used to achieve said theoretical density, said sintering aid being selected from the group consisting of lanthanum oxide, yttrium oxide, aluminum oxide, lanthanum aluminate, yttrium aluminate and mixtures thereof, said ceramic improved by the presence therein of a low dielectric loss promoter at a level of from about 0.1% to about 2% by weight, said low dielectric loss promoter being selected from the group consisting of an oxide of nickel, cobalt, titanium, zirconium, vanadium, tin and mixtures and compounds thereof, said low dielectric loss promoter being effective to provide a low dielectric constant and a low loss tangent that remains essentially unchanged through the temperature range of from about 25° C. to about 1100° C., the dielectric constant being below about 8.0 of about 9.375 gigahertz throughout said temperature range, the loss tangent being less than about 0.003 throughout said temperature range.

4,642,300

METHOD FOR AVOIDING OR REDUCING THE INTERACTIONS AND THEIR CONSEQUENCES FROM CONTACT OF HOT LIQUID METALLIC SODIUM WITH CONCRETE

Georg Schultheiss, Luneburg-Odeme; Charles von Minden, Hamburg, and Hans W. Fritzke, Geesthacht, all of Fed. Rep. of Germany, assignors to GKSS Forschungszentrum Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

Continuation of Ser. No. 435,336, Oct. 19, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,477

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 3141726

Int. Cl.[4] C04B *35/02, 35/04, 35/10, 35/48*

U.S. Cl. 501—124 **13 Claims**

1. In a method employing liquid metallic sodium as a cooling medium and having concrete structure wherein the liquid sodium, as hot liquid, metallic sodium can come in contact with, and interact with the concrete of the concrete structure, the improvement comprising providing a protective layer in contact with the concrete structure, at least for the region of the concrete structure near the surfaces that may come in contact with the hot, liquid, sodium to avoid or reduce the interactions and their consequences from cntact of the hot, liquid, metallic sodium with the concrete of the concrete structure, said protective layer being a protective concrete layer made of a concrete which consists essentially of only small quantites of silicon oxide and iron oxides, and in which aluminum oxide, magnesium oxide, zirconium oxide, or a mixture thereof is present in a proportion of 70% to 96.5% by weight, and wherein the concrete is made from a hydraulically hardened alumina cement and refractory concrete aggregate, said protective layer being suitable for sue in the secondary regions of sodium cooled reactors in which there may be no liner system and being suitable for augmenting the reliability of liner systems in the primary region of sodium cooled reactors.

7. In an apparatus containing a sodium cooling medium and a concrete structure, wherein the sodium cooling medium, as hot, liquid, metallic sodium, can contact and interact with the concrete of the concrete structure, the improvement conprising means for avoiding or reducing the interactions and their consequences from contact of the hot, liquid, metallic sodium with the concrete structure, the means comprising a protective layer in contact with the surface of the concrete structure, said protective layer being a protective concrete layer of a concrete consisting essentially of only small quantities of silicon oxide and iron oxides, and in which aluminum oxide, magnesium oxide, zirconium oxide, or a mixture thereof is present in a proportion of 70% to 96.5% by weight, and wherein the concrete is made from a hydraulically hardened alumina cement and refractory concrete aggregate, said protective layer being suitable for use in the secondary regions of sodium cooled reactors in which there may be no liner system and being suitable for augmenting the reliability of liner systems in the primary region of sodium cooled reactors.

4,642,301

HALIDED ALUMINA CATALYST

David L. Sikkenga, Wheaton, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Oct. 30, 1985, Ser. No. 792,902

Int. Cl.[4] B01J *21/04*

U.S. Cl. 502—231 **7 Claims**

1. A process for the manufacture of a high-activity chlorided alumina catalyst suitable for olefin polymerization comprising: calcining a catalyst base consisting essentially of gamma alumina at a temperature within the range from about 1300° F. to about 1800° F. for from about 6 to about 16 hours, followed by contacting the calcined catalyst base with a chloriding agent.

4,642,302

CATALYSTS HAVING ALKOXIDE-MODIFIED SUPPORTS AND METHOD OF INCREASING THE CATALYTIC ACTIVITY OF A CATALYTIC METAL

Clayton D. Wood, Framingham; Philip E. Garrou, Holliston; Iwao Kohatsu, Lexington, all of Mass., and Edward F. Gleason, Berkeley, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 655,991, Sep. 28, 1984, Pat. No. 4,559,364, which is a division of Ser. No. 567,112, Dec. 30, 1983, abandoned. This application Dec. 16, 1985, Ser. No. 809,543

Int. Cl.[4] B01J *21/04, 21/06, 21/08, 23/64*

U.S. Cl. 502—332 **16 Claims**

1. A catalyst composition comprising a catalytic metal and an alkoxide-modified support, which support comprises a core support material having (a) a surface area of from about 20 to 200 m^2/gram; and having (b) on the outer surface thereof a metal oxide produced from a precursor metal alkoxide.

4,642,303

CATALYST COMPOSITION

Terry L. Renken, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 27, 1985, Ser. No. 813,884

Int. Cl.[4] B01J *23/72, 23/86*

U.S. Cl. 502—315 **3 Claims**

1. A catalyst composition consisting essentially of nickel, copper, chromia and iron, said composition containing nickel and copper in the weight ratio of about 2 to 3 parts of nickel per part of copper and also containing, based on the total weight of the composition, from about 1 to about 20 wt. % of iron and from about 1 to about 6 wt. % of chromia.

4,642,304

ACTIVATED CARBON AND PROCESS FOR ITS PRODUCTION

Alfons Karl, Grünau; Erwin Walter, Geinhausen; Peter Kleinschmit, Hanau; Hermann Gottschlich, Brilon; Roland Kutz, Bielefeld, and Detley Koth, Mömbris, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 732,407, May 9, 1985, Pat. No. 4,603,119.
This application Mar. 28, 1986, Ser. No. 845,246
Claims priority, application Fed. Rep. of Germany, May 16, 1984, 3418150
Int. Cl.[4] B01J *20/20*; C01B *31/12*
U.S. Cl. 502—427 9 Claims

1. Activated carbon produced from particulate lignite coke and having the following properties:

(1) the product of the molasses number times the iodine number divided by 1000 is 350 to 1000,

(2) the product of the molasses number times the methylene blue titer divided by 10 is 500 to 1200, or

(3) the product of the molasses number times the iodine number divided by 1000 is 350 to 1000 and the product of molasses number times the methylene blue titer divided by 10 is 500 to 1200.

5. A product according to claim 1 wherein the lignite coke employed has a particle size of 0.5–4.0 mm.

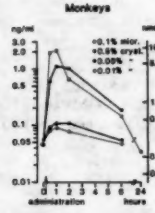
6. An activated carbon having the properties of claim 1 prepared by a process comprising activating lignite coke with steam in a rotary tube and spraying into the rotary tube during the activation phase aqueous alkali carbonate solution, aqueous alkaline earth carbonate solution, aqueous alkali hydroxide solution, aqueous alkaline earth hydroxide or mixture thereof.

4,642,305

EYE DROPS COMPOSITION

Elof Johansson, and Lena Öhman, both of Upsala, Sweden, assignors to Pharmacia AB, Upsala, Sweden

PCT No. PCT/SE84/00354, § 371 Date May 14, 1985, § 102(e) Date May 14, 1985, PCT Pub. No. WO85/01875, PCT Pub. Date May 9, 1985
PCT Filed Oct. 24, 1984, Ser. No. 734,268
Claims priority, application Sweden, Oct. 25, 1983, 8305864
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—182 9 Claims



1. An eye drop composition for the treatment of chronic conjunctivitis simplex comprising estradiol-17beta in a concentration of from 0.001 to 0.01% by weight, dissolved in a solution of cyclodextrin or cyclodextrin derivative.

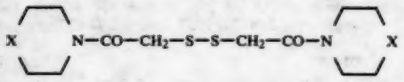
4,642,306

CYCLIC DITHIODIACETAMIDES AND COMPOSITIONS CONTAINING THEM

Jean Rosa; Jean-Paul Castaigne, both of Paris; Henri Demarne, Montpellier, and Pierre Tozzolino, Morlaas, all of France, assignors to Sanofi and Institut National de la Sante et de la Recherche Medicale, both of Paris, France

Filed May 17, 1984, Ser. No. 611,516
Claims priority, application France, May 17, 1983, 83 08155
Int. Cl.[4] A61K *31/535, 31/54*; C07D *265/30, 279/12*
U.S. Cl. 514—222 7 Claims

1. Cyclic dithiodiacetamide of formula:



in which X represents a direct bond, an atom of oxygen or of sulfur, a methylene group, an ethylene group or an N—R group, where R is an atom of hydrogen or a lower alkyl group, lower (hydroxy)alkyl group, lower alkanoyl group or a phenyl group, and the pharmaceutically acceptable salts thereof.

5. A pharmaceutical composition for inhibition of malformation or the destruction of the red blood corpuscles due to a genetic modification of haemoglobin or to parasites, which comprises, as active ingredient, an effective amount for inhibition of malformation of the destruction of the red blood corpuscles due to genetic modification of haemoglobin or to parasites of a compound of claim 1 and a pharmaceutically acceptable carrier.

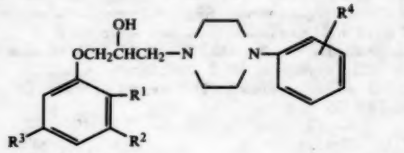
4,642,307

1-PHENOXY-3-(4-PHENYLPIPERIDINO)-2-PROPAND HAVING BOTH ALPHA- AND BETA-ADRENERGIC ACTION

Yoshiaki Aoyagi; Takashi Okubo; Toshio Tomita; Hiroshi Nishida, and Hiroshi Enomoto, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

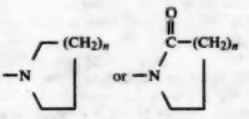
Filed Mar. 18, 1983, Ser. No. 476,857
Int. Cl.[4] A61K *31/495*; C07D *401/00*
U.S. Cl. 514—252 15 Claims

1. A compound of the formula (I):



(I)

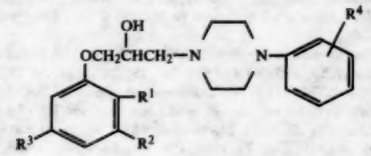
or a pharmaceutically acceptable salt thereof wherein R^1 is hydrogen, halo or lower alkyl; R^2 is



where n is 1, 2 or 3; R^3 is hydrogen, lower alkyl or lower alkoxycarbonyl; and R^4 is hydrogen, lower alkyl unsubstituted or alpha-substituted by lower alkoxy, lower alkoxy, halo or lower alkanoyl.

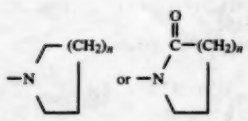
11. A method of effecting both alpha-adrenergic blocking action and beta-adrenergic blocking action and treating hypertension in humans and animals which comprises administering

to a human or animal in need thereof a therapeutically effective amount of a compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof wherein R^1 is hydrogen, halo or lower alkyl; R^2 is



where n is 1, 2 or 3; R^3 is hydrogen, lower alkyl or lower alkoxycarbonyl; and R^4 is hydrogen, lower alkyl unsubstituted or alpha-substituted by lower alkoxy, lower alkoxy, halo or lower alkanoyl, in combination with a pharmaceutically acceptable carrier.

4,642,308

N-(1,8-NAPHTHYRIDIN-2-YL) AMIDES AND THEIR PHARMACEUTICAL USE

Claude Cotrel, Paris; Claude Guyon, Saint-Maur-des-Fosses; Gérard Roussel, Soisy-sur-Seine, and Gérard Taurand, Creteil, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Jul. 17, 1985, Ser. No. 755,896

Claims priority, application France, Jul. 19, 1984, 84 11442

Int. Cl.[4] A61K *31/50, 31/44;* **C07D** *237/24, 471/04*

U.S. Cl. 514—253 **11 Claims**

1. A substituted amide of the formula:

R—CONH—Het

in which R denotes cycloalkyl of 3 to 6 carbon atoms, cyclohexadienyl, phenyl, or phenyl substituted by 1 or 2 fluorine atoms, or by a hydroxy radical, or phenyl substituted at positions 3- or 4- by alkyl or alkyloxy, or at positions 3- and 4- by methylenedioxy, or substituted at position 2- or 3- by dialkylamino; or R denotes 3-pyridyl, alkyloxy-3- pyridyl, thienyl, alkylthienyl, furyl, tetrahydropyridyl, pyridazinyl or alkylpyridazinyl; and Het denotes 1,8-naphthyridin-2-yl, unsubstituted or substituted at position 7- by halogen, hydroxymethyl, alkyl, alkyloxy, alkyloxyalkyloxy, alkenyloxy of 3 to 4 carbon atoms, alkynloxy of 3 to 4 carbon atoms, alkylthio, benzylthio, phenoxy, phenoxy substituted by fluorine, or by chlorine or bromine at position 2-, or by alkyloxy or by 1 or 2 alkyls, pyridyloxy or alkylpiperidyloxy; and alkyl portions mentioned above are each linear or branched and contain 1 to 4 carbon atoms each.

10. Method of treating a subject in whom an anxiolytic, hypnotic, anti-convulsant, anti-epileptic or muscle-relaxant effect is desired, which comprises administering to such subject an effective amount of a compound according to claim 1.

4,642,309

INDOLIN-2-ONE DERIVATIVES PREPARATION THEREOF AND INTERMEDIATES FOR THE PREPARATION THEREOF

Helmut Michel, Mannheim; Klaus Marzenell, Ladenburg; Wolfgang Kampe, Heddesheim; Wolfgang Bartsch, Viernheim, and Wolfgang Schaumann, Heidelberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

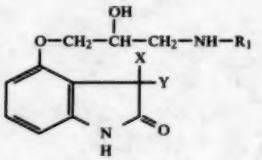
Continuation of Ser. No. 592,616, Mar. 23, 1984, abandoned. This application Sep. 26, 1985, Ser. No. 780,704

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 3310891

Int. Cl.[4] C07D *209/34;* **A61K** *31/40*

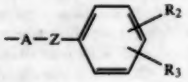
U.S. Cl. 514—269 **21 Claims**

1. An indolin-2-one compound of the formula I as follows:



(I)

wherein R_1 is a C_1–C_6 alkyl, or a group of the formula



wherein A is a straight-chained or branched C_2–C_4 alkylene and z is oxygen,

R_2 is hydrogen, hydroxyl, C_1–C_6 alkoxy or C_2–C_4 alkenyloxy,

R_3 is hydrogen

X is hydrogen

Y is hydrogen, or a group of the general formula

wherein Q is hydrogen or Q and X together represent a bond, and R_7 is imidazole, triazole, pyrrole, pyrazole, pyridine, thiophene, indole, indazole, or uracil or R_7 is phenyl which is optionally substituted one or two times by hydroxyl, carboxyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_6 alkylsulphinyl, C_1–C_6 alkylsulphonylamido, methylenedioxy, nitro, or amino,

with the proviso that R_1 cannot be a C_1–C_6 alkyl radical when X and Y are both hydrogen atoms; or

the pharmacologically acceptable salts thereof.

4,642,310

CIRCULATION-ACTIVE TETRAHYDROTHIENOPYRIDINES

Siegfried Goldmann, Wuppertal; Matthias Schramm, Cologne; Günter Thomas, and Rainer Gross, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1985, Ser. No. 716,876

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3412947

Int. Cl.[4] A61K *31/38;* **C07D** *513/04, 417/02*

U.S. Cl. 514—301 **12 Claims**

1. A tetrahydrothienopyridine of the formula

4,642,311

β-ADRENERGIC BLOCKING IMIDAZOLYLPHENOXY PROPANOLAMINES

John J. Baldwin, Gwynedd Valley, and Gerald S. Ponticello, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

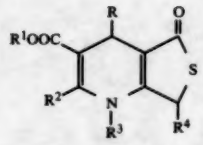
Continuation-in-part of Ser. No. 503,923, Jun. 13, 1983, Pat. No. 4,567,276, which is a division of Ser. No. 255,202, Apr. 20, 1981, Pat. No. 4,440,774, which is a continuation-in-part of Ser. No. 184,501, Sep. 5, 1980, abandoned, which is a continuation of Ser. No. 801,120, May 27, 1977, abandoned, which is a continuation of Ser. No. 641,420, Dec. 17, 1985, Pat. No. 4,134,983, which is a continuation-in-part of Ser. No. 554,372, Mar. 3, 1975, abandoned. This application May 7, 1984, Ser. No. 607,909

The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.

Int. Cl.[4] A61K *31/44, 31/445;* C07D *401/12, 401/14*

U.S. Cl. 514—316 13 Claims

1. A compound of the formula:



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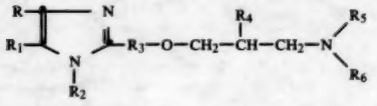


wherein:

R and R_1 are independently

(a) hydrogen;

(b) C_1–C_{10} linear or branched alkyl;

(c) substituted C_1–C_{10} linear or branched alkyl having 1–3 substituents selected from the group consisting of halo (F, Br, Cl), hydroxy, C_1–C_4 alkoxy, piperidino, di(lower C_1–C_4alkyl)amino;

(d) heteroaryl group having 5–6 ring atoms one of which is a hetero atom selected from O, N and S, provided that one of R or R_1 is hydrogen;

(e) unsubstituted or substituted aryl of C_6 or C_{10} and the substituents are 1–2 halo or C_1–C_6 alkoxy groups;

(f) pentafluorophenyl;

(g) C_3–C_{10}cycloalkyl;

(h) halo;

(i) cyano;

(j) C_1–C_6alkanoylamino;

(k) carboxy and carboxy derivatives;

(l)

wherein R_a is hydrogen or C_1–C_6 alkyl;

(m)

wherein R_d and R_e are independently hydrogen, C_1–C_8 linear or branched alkyl, C_6 or C_{10} unsubstituted or substituted aryl having 1–2 substituents selected from C_1–C_4 alkyl, halo, alkoxy or hydroxy, or R_d and R_e, together with the N atom, can be joined to form a piperidino ring;

R_2 is

(a) hydrogen;

(b) C_1–C_{10} linear or branched alkyl;

(c) C_3–C_6 alkenyl;

(d) hydroxy-C_1–C_{10} linear or branched alkyl;

R_3 is

(a) naphthyl;

(b) tetrahydronaphthyl;

in which

R represents a phenyl, naphthyl, thienyl, thionaphthenyl, isothionaphthenyl, thiochromonyl or thiochromenyl radical, it being possible for the radicals mentioned optionally to contain 1 to 3 identical or different substituents from the group comprising alkyl (1 to 20 carbon atoms), alkenyl (1 to 20 carbon atoms), alkinyl (1 to 20 carbon atoms), alkoxy (1 to 20 carbon atoms), fluorine, chlorine, bromine, iodine, trifluoromethyl, monofluoroalkoxy (1 to 10 C atoms), polyfluoroalkoxy (1 to 10 C atoms), hydroxyl, amino, monoalkylamino (1 to 10 C atoms), dialkylamino (1 to 10 C atoms), nitro, cyano, azido, carboxyl, carbalkoxy, carboxamido, sulphonamido, SO_m-alkyl (m=0 to 2, 1 to 20 C atoms), phenyl-, benzyl-, benzyloxy and benzylthio, it being possible for the last four substituents mentioned optionally to contain 1 to 3 radicals from the group comprising alkyl (1 to 5 C atoms), alkoxy (1 to 5 C atoms), alkylthio (1 to 5 C atoms), fluorine, chlorine, bromine, iodine, cyano, nitro, azido, hydroxyl, trifluoromethyl, amino, alkylamino (1 to 6 C atoms) or dialkylamino (in each case 1 to 6 C atoms),

R^1 represents a straight-chain, branched or cyclic saturated or unsaturated hydrocarbon radical (1 to 20 C atoms), which can optionally be interrupted in the chain by 1 or 2 oxygen or sulphur atoms and which can optionally be substituted by one or more fluorine atoms, NO_2, trialkylsilyl (3 to 12 C atoms), —OH, —Cl, Br, I, —CN, amino, alkylamino (1 to 10 C atoms), dialkylamino (in each case 1 to 10 C atoms), benzylalkylamino (alkyl radical with 1 to 8 C atoms), phenyl, naphthyl or pyridyl,

R^2 represents hydrogen, —NH_2, —CHO, —CN, —CH_2OH or a straight-chain or branched, saturated or unsaturated hydrocarbon radical (up to 8 C atoms),

R^3 represents hydrogen or a straight-chain or branched alkyl radical (1 to 10 C atoms) which is optionally interrupted in the alkyl chain by one or two oxygen atoms and can optionally be substituted by fluorine, chlorine, bromine, iodine, —CN, —NH_2, —OH or morpholino, and

R^4 represents hydrogen or a straight-chain or branched alkyl radical (1 to 10 C atoms),

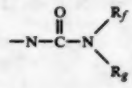
or a pharmaceutically acceptable salt thereof.

10. A method of combating hypotension, diabetes or a salt imbalance in a patient in need thereof which comprises administering an amount effective therefor of a tetrahydrothienopyridine or salt according to claim 1.

(c) indanyl;
(d)

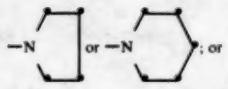
wherein
R_c is hydrogen; halo; C_1–C_4 linear or branched alkyl; C_1–C_4 alkoxy; hydroxy; cyano; phenyl;
x is 0–4;
R_4 is
(a) hydroxy;
(b)

wherein R_b is C_1–C_6 linear or branched alkyl;
R_5 and R_6 are independently
(a) hydrogen;
(c) substituted C_1–C_6 linear or branched alkyl and the substituent is hydroxy or C_1–C_8 alkoxy;
(d) monosubstituted C_1–C_6 linear or branched alkyl and the substituent is pyridyl, C_1–C_4alkylthio, C_1–C_4alkylsulfoxide, C_1–C_4alkylsulfone provided that one of R_5 or R_6 is hydrogen;
(e) alkylureido alkyl of C_2–C_8 wherein the ureido has the formula:



wherein:
Rf and Rg can be independently be hydrogen;
C_1–C_8alkyl optionally substituted with hydroxy or C_1–C_8alkoxy;
unsubstituted or substituted aryl of C_6 or C_{10} having 1–2 substituents selected from halo, C_1–C_4 alkoxy, or C_1–C_4 alkyl;
unsubstituted or substituted aralkyl wherein the alkyl is C_1–C_8 linear or branched and the aryl is C_6 having 1–2 substituents selected from C_1–C_8 alkoxy, hydroxy, halo, or C_1–C_8 alkyl; or
Rf and Rg together with the N atom can be joined to form a piperidino ring;
(f) unsubstituted or substituted aryl of C_6 or C_{10} wherein the substituents are 1–2 C_1–C_4alkyl groups;
(h)

wherein Rh is C_1–C_4alkyl and n is 0, 1, or 2; or R_5 and R_6 when joined together with the N atom form



a pharmaceutically acceptable acid addition salt or a quaternary ammonium salt thereof provided that there is at least one substituent which is or has a heterocyclic group with one hetero atom and further provided that none of the substituents is or has a heterocyclic group with more than one hetero atom.

9. A method for treating hypertension, arrhythmia, and angina, or effecting β-adrenergic blockade, or providing cardioprotection comprising administering to a patient in need of such treatment a pharmaceutically effective amount of a compound of claim 1.

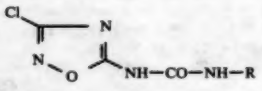
4,642,312

N-(3-CHLORO-1,2,4-OXADIAZOL-5-YL)-UREAS

Ulrich Heinemann, Leichlingen; Hans-Joachim Knops, Monheim; Karl Steinbeck, Burscheid; Wilhelm Brandes, Leichlingen; Gerd Hänssler, and Paul Reinecke, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1985, Ser. No. 801,452
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1984, 3445205
Int. Cl.[4] A01N *47/38*; C07D *271/06*
U.S. Cl. 514—364 **11 Claims**

1. An N-(3-chloro-1,2,4-oxadiazol-5-yl)-urea of the formula



in which R is alkyl or halogenoalkyl each of which has 1 to 12 carbon atoms and, where relevant, 1 to 15 halogen atoms, or is cycloalkyl or cycloalkylalkyl each of which has 3 to 7 carbon atoms in the cycloalkyl part and, where relevant, 1 to 6 carbon atoms in the alkyl part and each of which is optionally substituted in the cycloalkyl part by halogen and/or alkyl having 1 to 4 carbon atoms, or is aryl which has 6 to 10 carbon atoms and is optionally substituted by halogen, cyano, nitro, alkyl, alkoxy, halogenoalkyl with up to 9 halogen atoms, alkoxyalkyl, alkoxyalkyloxycarbonyl and/or alkoxycarbonyl, the various alkyl and alkoxy moieties having up to 8 carbon atoms.

4,642,313

FURYLOXAZOLYLACETIC ACID DERIVATIVES AND PROCESSES FOR PREPARING SAME

Kazuo Matsumoto, Ibaraki, and Kohki Takashima, Tokyo, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Feb. 10, 1983, Ser. No. 465,544
Claims priority, application Japan, Feb. 26, 1982, 57-30921
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.
Int. Cl.[4] C07D *263/30*; A61K *31/42*
U.S. Cl. 514—374 **17 Claims**

1. A compound of the formula:

wherein R^1 is 4-chlorophenyl or 3,4-dichlorophenyl, and R^2 is hydrogen or ethyl, or a pharmaceutically acceptable salt thereof.

4,642,314

ANTIULCER COMPOUNDS

Yoshiyuki Tahara, Oi; Michiko Nagai, Wako; Katsura Kogure, Kawagoe; Shigeo Kawase, Tsurugashima, and Teruhito Yamaguchi, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Japan

Division of Ser. No. 121,284, Feb. 13, 1980, Pat. No. 4,483,871, which is a division of Ser. No. 889,568, Mar. 23, 1978, Pat. No. 4,221,810. This application Nov. 14, 1984, Ser. No. 671,237

Int. Cl.[4] A61K *31/335, 31/22*

U.S. Cl. 514—475 **4 Claims**

1. An antiulcer composition which comprises as active ingredient, an antiulcer effective amount of a compound selected from the group consisting of phytyl geranylacetate, phytyl citronellylacetate, phytyl elaidate, phytyl petroselinate, phytyl ricinoleate, phytyl 9,10-epoxystearate, phytyl phytylacetate, phytyl erucate, phytyl brassidate, and phytyl decaprenylacetate in a pharmaceutically acceptable carrier.

4,642,315

CARBOXY AND SUBSTITUTED CARBOXY ALKANOYL AND CYCLOALKANOYL PEPTIDES

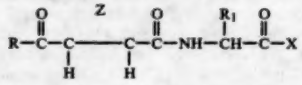
Eric M. Gordon, and Harold N. Weller, III, both of Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 442,681, Nov. 18, 1982, Pat. No. 4,499,079. This application Oct. 22, 1984, Ser. No. 663,723

Int. Cl.[4] A61K *31/475, 31/47;* **C07D** *217/16*

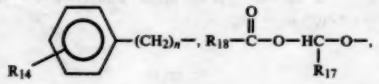
U.S. Cl. 514—307 **7 Claims**

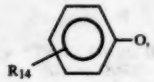
1. A compound of the formula



and a pharmaceutically acceptable salt thereof wherein:

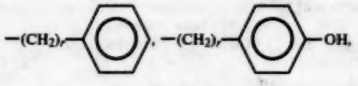
R is hydroxy, lower alkoxy, lower alkyl,





amino, HO—NH—, lower alkoxy—HN—, or MO—;

R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,



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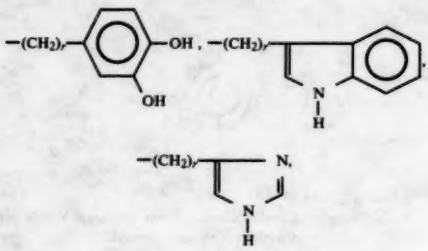
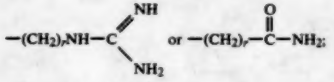
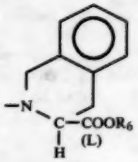


—$(CH_2)_r$—SH, —$(CH_2)_r$—OH, —$(CH_2)_r$—NH_2, —$(CH_2)_r$—S—lower alkyl,



X is

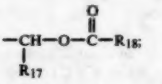


R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

n is zero, one, two, three, or four;

r is an integer from 1 to 4;

R_6 is hydrogen, lower alkyl, benzyl, benzhydryl, salt forming ion, or



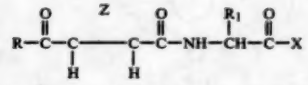
R_{17} is hydrogen, lower alkyl, cycloalkyl, or phenyl;

R_{18} is hydrogen, lower alkyl, lower alkoxy or phenyl;

M is a salt forming ion; and

Z completes a cycloalkyl ring of 3 to 10 carbons, said cycloalkyl ring in which one of the carbon atoms is substituted by a lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, halo, trifluoromethyl, or hydroxy group, a cycloalkenyl ring of 5 to 7 carbons, or a cycloalkadienyl ring of 6 or 7 carbons.

7. The method of treating hypertension in a mammalian specie which comprises administering an effective amount of a composition comprising a pharmaceutically acceptable carrier and hypotensively active compound of the formula



wherein R, R_1, X and Z are as defined in claim 1.

4,642,316

PARENTERAL PHENYTOIN PREPARATIONS

Mahdi B. Fawzi, Flanders, and Anne K. Taylor, Morris Plains, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 20, 1985, Ser. No. 735,932
Int. Cl.[4] A61K *31/415*
U.S. Cl. 514—398 13 Claims

1. A solution suitable for parenteral use consisting essentially of a pharmaceutically effective amount of a complex of at least one drug selected from the group consisting of phenytoin and phenytoin sodium having the empirical formula $C_{15}H_{11}N_2NaO_2$ with a reagent selected from the group consisting of: triethanolamine, ethylene diamine, ethanolamine, choline, arginine, meglumine and mixtures thereof.

4,642,317

PROCESS FOR FEEDING RUMINANT ANIMALS AND COMPOSITION FOR USE THEREIN

Donald L. Palmquist, Wooster, and Thomas C. Jenkins, Apple Creek, both of Ohio, assignors to The Ohio Agricultural Research and Development Center, Wooster, Ohio

Continuation of Ser. No. 274,145, Jun. 16, 1981, abandoned. This application Jan. 3, 1984, Ser. No. 567,617
Int. Cl.[4] A61K *31/20*
U.S. Cl. 514—558 15 Claims

1. A process for supplying a fatty acid containing at least 10 carbon atoms to ruminant animals which comprises feeding to said animals the calcium salt of said fatty acid in an amount equal to at least about 1% of the dry matter content of said animals' feed.

4,642,318

METHOD FOR DECREASING RADIATION LOAD IN PUVA THERAPY

Klaus Wolff, Patscherstrasse 7, A-6080 Igls, Austria

Continuation of Ser. No. 442,362, Nov. 17, 1982, abandoned, which is a continuation of Ser. No. 119,619, Feb. 8, 1980, abandoned, which is a continuation of Ser. No. 856,069, Nov. 30, 1977, abandoned. This application Jun. 21, 1985, Ser. No. 747,549
Int. Cl.[4] A01N *37/08*; A61N *5/12*
U.S. Cl. 514—560 12 Claims

1. An improved method for treating a psoriatic subject undergoing treatment with a psoralen in conjunction with ultraviolet A radiation of from wavelength of 3200 to 4000 angstroms, which improved method comprises

prior to initiation of said treatment, pretreating said subject for a period of from 4 to 10 days with an effective amount of an anti-psoriatic polyene compound, and thereafter

initiating said treatment with a psoralen in conjunction with ultraviolet A radiation and continuing said treatment concurrently with the administration of said anti-psoriatic polyene compound.

4,642,319

MODIFIED TEREPHTHALIC ESTER POLYOLS AND RIGID FOAMS THEREFROM

Kenneth G. McDaniel, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 22, 1986, Ser. No. 821,319
Int. Cl.[4] C08G *18/14, 18/32, 18/34, 18/42*
U.S. Cl. 521—175 29 Claims

1. A terephthalic ester polyol produced by reacting recycled polyethylene terephthalate with about 5 wt % to 95 wt % of a functionality enhancing agent selected from the group consisting of aromatic amino polyols, sucrose polyols, alkoxylated alphamethyl glucosides, alkoxylated glycerine and alkoxylated sorbitol.

10. A mixture of modified terephthalic ester polyols produced by:

a. reacting recycled polyethylene terephthalate with an oxyalkylene glycol of the formula:

$$HO-(CH_2CHO)_n-H$$
$$\quad\quad\quad

(c) a curing agent which is capable of reacting or initiating a reaction with the functional groups of the polymeric resin to form crosslinks and cure the polymeric resin to a C-stage upon application of sufficient energy in the form of heat or radiant energy, said curing agent being non-reactive blocked at the conditions which will activate the adhesive composition, said curing agent being present in an amount sufficient to C-stage the polymeric resin;

said composition being flexibie, and in the C-stage capable of forming an infusible composition which does not melt, flow or decompose when exposed for 10 seconds to molten solder at 260° C. and does not soften when exposed to dichloromethane at 25° C. for one minute.

4,642,322

STABILIZATION OF CHLORINE-CONTAINING THERMOPLASTICS WITH NITROGEN-CONTAINING ORGANIC COMPOUNDS

Wolfgang Wehner, Zwingenberg, Fed. Rep. of Germany; Horst Müller, deceased, late of Fürth/Odw, Fed. Rep. of Germany (by Anneliese Müller, Silvia Müller, Werner J. Müller, heirs), and Rainer Schneider, Zwingenberg, all of Fed. Rep. of Germany, assignors of Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 746,927, Jun. 20, 1985, abandoned, which is a continuation of Ser. No. 592,677, Mar. 23, 1984, abandoned. This application Jan. 2, 1986, Ser. No. 815,771

Claims priority, application Switzerland, Mar. 30, 1983, 1760/83

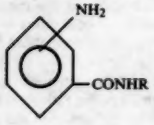
Int. Cl.⁴ C08K *5/20, 5/25*

U.S. Cl. 524—191 **7 Claims**

1. A stabilized composition which comprises

(a) a chlorine-containing thermoplastic derived from an ethylenically unsaturated monomer, and

(b) 0.01 to 10% by weight, based on component (a) of at least one compound of the formula



wherein

R is —OH, —NH_2 or C_2–C_3-alkyl substituted by hydroxy or said hydroxy-substituted alkyl further substituted by C_1–C_4-alkoxy or by phenoxy.

4,642,323

PROCESS FOR PREPARING LATEX POLYMERS FROM GASEOUS MONOMERS

Ajay I. Ranka, Allison Park, and Suryya K. Das, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 30, 1985, Ser. No. 814,459

Int. Cl.⁴ C08K *3/20*

U.S. Cl. 524—458 **5 Claims**

1. A process for preparing a latex polymer which comprises subjecting a gaseous polymerizable alpha, beta-ethylenically unsaturated monomer component to free radical initiated, emulsion polymerization conditions in aqueous medium in the presence of a polymeric surfactant which is a salt of an acid group-containing polymer, comprising pre-emulsifying the monomer component with surface active agent in aqueous phase prior to polymerization and adding the pre-emulsified monomer component incrementally to a reactor for emulsion polymerization.

4,642,324

VINYL CHLORIDE RESIN COMPOSITION

Toshiaki Kobayashi; Hiromichi Arakawa, both of Yokohama, and Tatsuo Ohira, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1985, Ser. No. 701,499

Claims priority, application Japan, Feb. 16, 1984, 59-27622; Feb. 17, 1984, 59-28319

Int. Cl.⁴ C08L *31/00*

U.S. Cl. 524—559 **12 Claims**

1. A vinyl chloride resin composition comprising (A) a copolymer derived from 70 to 99.8% by weight of vinyl chloride, 0.2 to 30% by weight of a monoester of an alpha,beta-unsaturated dicarboxylic acid, 0 to 2% by weight of a compound having two or more active double bonds in the molecule and 0 to 20% by weight of another vinyl compound, (B) a mono- or divalent metal compound and- (C) a plasticizer.

4,642,325

CATHODE-DEPOSITING ELECTRODEPOSITION COATING COMPOSITION

Yutaka Otsuki; Hiroyoshi Omika; Akio Oshima, all of Yokohama; Yoshihiko Araki, Tokyo, and Yasuyuki Tsuchiya, Hirakata, all of Japan, assignors to Nippon Oil Company, Ltd., Osaka, Japan

Filed Apr. 5, 1985, Ser. No. 720,602

Claims priority, application Japan, Apr. 14, 1984, 59-73879; Dec. 10, 1984, 59-259312

Int. Cl.⁴ C08L *63/10*

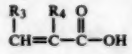
U.S. Cl. 525—65 **5 Claims**

1. A cathode-depositing electrodeposition coating composition having excellent low-temperature curability comprising as essential ingredients

(A) 100 parts by weight of a reaction product of (1) a high molecular compound having a molecular weight of 500 to 5,000 based upon the number average molecular weight and containing carbon-carbon double bonds with an iodine number of 50 to 500 and 3 to 12% by weight of oxirane oxygen, (2) 30 to 300 millimoles, per 100 g of the high molecular compound (1), of an amine compound represented by the general formula

wherein each of R_1 and R_2 represents a hydrocarbon group having 1 to 20 carbon atoms a part of which may be substituted by a hydroxyl group, and R_1 and R_2 may assume a ring structure which may contain an unsaturated group,

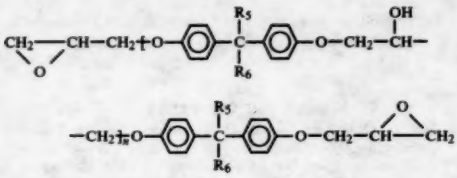
and (3) 50 to 150 millimoles, per 100 g of the high molecular compound (1), of an alpha,beta-unsaturated carboxylic acid represented by the general formula



wherein R_3 and R_4 represent a hydrogen atom or a methyl group,

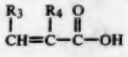
or an unsaturated fatty acid having a molecular weight of 100 to 350 based upon the number average molecular weight and containing at least 10% by weight of a carbon-carbon conjugated double bond or a mixture of both,

(B) 10 to 200 parts by weight of a reaction product of a diglycidyl compound represented by the general formula



wherein R_5 and R_6 represent a hydrogen atom or a methyl group, and n represents an integer of 0 to 20,

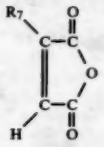
with 1.9 to 2.1 moles, per molecule of the diglycidyl compound, of an alpha,beta-unsaturated carboxylic acid represented by the general formula



wherein R_3 and R_4 represent a hydrogen atom or a methyl group,

or an unsaturated fatty acid having a molecular weight of 100 to 350 based upon the number average molecular weight and containing at least 10% by weight of a carbon-carbon double bond, or a mixture of both,

(C) 0.5 to 10 parts by weight of a reaction product of 100 g of a high molecular compound having a molecular weight of 500 to 5,000 based upon the number average molecular weight and containing a carbon-carbon double bond with an iodine number of 50 to 500 and 40 to 400 millimoles of an alpha,beta-unsaturated dicarboxylic acid anhydride represented by the general formula



wherein R_7 represents a hydrogen or halogen atom or a methyl group,

or a derivative of the reaction product such as its partial ester or partial amide, or 0.1 to 10 parts by weight of an unsaturated monocarboxylic acid having 6 to 24 carbon atoms or its dimer, and

(D) 0.005 to 1.0 part by weight, as metal, of a water-soluble salt of an organic acid with a metal selected from manganese, cobalt, and copper.

4,642,326

POLYVINYLIDENE FLUORIDE BASE BLEND POLYMER

Takashi Yasumura, Fujimi; Toshio Koishi, Sakado, and Isao Tanaka, Kawagoe, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Nov. 16, 1984, Ser. No. 671,943

Claims priority, application Japan, Nov. 18, 1983, 58-216340

Int. Cl.[4] C08L 27/16

U.S. Cl. 525—153 **2 Claims**

1. A blend polymer composition comprising:

100 parts by weight of a polyvinylidene fluoride resin; and

1 to 100 parts by weight of a copolymer of vinylidene fluoride and hexafluoroacetone;

wherein the mole ratio of vinylidene fluoride to hexafluoroacetone in said copolymer is in the range from 96:4 to 50:50.

4,642,327

NOVEL POLYETHERIMIDES

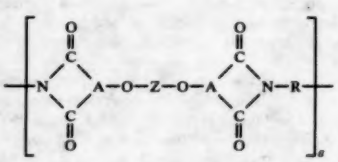
Markus Matzner, Edison, N.J., and Donald M. Papuga, Danbury, Conn., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 5, 1985, Ser. No. 772,882

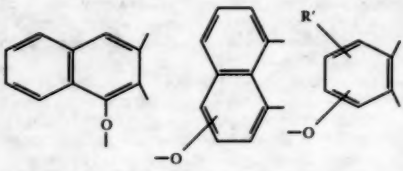
Int. Cl.[4] C08G 65/40

U.S. Cl. 525—434 **15 Claims**

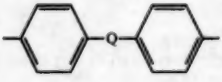
1. A polyetherimide of the formula:



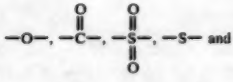
where a represents a whole number in excess of 1, the group —O—A< is selected from:



R′ being hydrogen, lower alkyl or lower alkoxy, and the divalent bonds of the —O—Z—O radical are in the 3,3′;3,4′;4,3′ or the 4,4′ position, Z is derived from a dihydroxy-terminated poly(phenylene oxides), a dihydroxy-terminated poly(aryl ether), or a dihydroxy-terminated poly(aryl ether ketone), wherein the molecular weight of Z is ≧1,500, and R is a divalent organic radical selected from the class consisting of (1) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (2) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, 2–8 carbon atoms containing alkylene terminated polydiorganosiloxane radicals, and (3) divalent radicals included by the formula



wherein Q is a member selected from the class consisting of



where x is a whole number from 1 to 5 inclusive.

4,642,328

COPOLYMERIZATION OF ETHYLENE AND AN ALPHA-OLEFIN HAVING 6 CARBON ATOMS IN A FLUIDIZED BED

Frédéric Morterol, Lavera, and Jean L. Vidal, Martigues, both of France, assignors to BP Chimie Societe Anonyme, Paris, France

Continuation of Ser. No. 525,545, Aug. 22, 1983, abandoned. This application Jan. 3, 1985, Ser. No. 689,017
Claims priority, application France, Sep. 7, 1982, 82 15162
Int. Cl.[4] C08F 4/10
U.S. Cl. 526—125 22 Claims

1. Process for the preparation of copolymers of ethylene and an alpha-olefin having 6 carbon atoms and having a density comprised between 0.910 and 0.940, characterised in that it comprises

providing a catalyst system comprising on the one hand a co-catalyst consisting of at least one organo-metallic compound of a metal of Groups II and III of the Periodic Table of Elements and on the other hand a catalyst comprising a support based essentially on magnesium chloride and optionally containing an aluminium chloride, consisting of particles of spheroidal shape having a mean diameter by mass comprised between 10 and 100 microns and showing a particle size distribution such that the ratio Dm/Dn of the mean diameter by mass, Dm, to the mean diameter by number, Dn, of the particles is less than or equal to 3, on to which support there has been precipitated a derivative of a transition metal of Groups IV, V and VI of the Periodic Table of Elements which is known for its catalytic properties in the polymerisation and copolymerisation of alpha-olefins,

wherein before the said co-polymerisation is carried out, subjecting the catalyst to a pre-polymerisation of the ethylene or a pre-co-polymerisation of the ethylene and an alpha-olefin in suspension in an inert liquid medium so as to obtain a prepolymer having from 0.1 to 500 g of polymer or co-polymer per milli-gramme-atom of transition metal,

recovering said prepolymer as a dry powder,

copolymerising ethylene and said alpha-olefin having 6 carbon atoms in the gaseous state in admixture with said prepolymer powder, an inert gas such as nitrogen, methane or ethane and optionally with hydrogen, the gaseous mixture circulating from bottom to top through a fluidised bed of the copolymer being formed, the copolymerisation being effected at a temperature comprised between 50° and 90° C., in the presence of said catayst, and

the partial pressure (pp) of the various constituents of the gaseous mixture being such that:

pp alpha-olefin having 6 carbon atoms is in the range 0.05 MPa to 0.15 MPa,

pp alpha-olefin having 6 carbon atoms/pp ethylene is in the range 0.15 to 0.5,

pp hydrogen/pp ethylene is in the range 0.05 to 0.5,

pp inert gas/total pressure is in the range 0.2 to 0.9.

4,642,329

PREPOLYMER PROCESSING OF ARYLCYCLOBUTENE MONOMERIC COMPOSITIONS

Robert A. Kirchhoff; Alan Schrock, and Jo A. Gilpin, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 644,836, Aug. 27, 1984. This application Aug. 30, 1985, Ser. No. 770,913
Int. Cl.[4] C08F 32/00
U.S. Cl. 526—284 48 Claims

1. A process for preparing reactive polymeric compositions from arylcyclobutene monomeric compositions, wherein an arylcyclobutene is an aryl moiety to which one or more cyclobutene rings are fused, said process comprising

(a) subjecting the monomeric composition to polymerization conditions to provide a partially polymerized composition, and

(b) removing the partially polymerized composition from said conditions.

4,642,330

DISPERSANT SALTS

Robert E. Quinn, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 686,786, Dec. 27, 1984, abandoned. This application Mar. 20, 1986, Ser. No. 841,923
Int. Cl.[4] C08G 69/26
U.S. Cl. 528—335 13 Claims

1. An aqueous dispersion, comprising:

water;

a dispersant salt composition comprising the reaction product of an acid (A) and a solubilizer (B), wherein;

(A) is a mineral acid or a sulfonic acid-free organic acid, and

(B) is a phosphorus-free carboxylic solubilizer made by reacting (B1) and (B2) wherein (B1) is a polycarboxylic acid acylating agent having a hydrocarbon-based substituent containing more than 30 carbon atoms and (B2) is a poly(alkyleneamine); and

an additional component selected from the group consisting of a surfactant and a hydrophilic organic solvent, the additional component being present in sufficient amount so as to impart stability to a continuous aqueous phase.

4,642,331

METHOD OF ENHANCING THE FLEXIBILITY OF POLYPYRROLE STRUCTURES

Ian M. Hodge, Penfield, N.Y., assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 20, 1985, Ser. No. 736,057
Int. Cl.[4] C08F 8/32; C08J 7/12
U.S. Cl. 528—492 4 Claims

1. A method for enhancing the flexibility of structures formed of a polypyrrole comprising the steps of: forming the polypyrrole structure; contacting the structure with an amine antioxidant for a period of time sufficient to render the structure less brittle; and desisting contact with the antioxidant.

4,642,332

EFFECTIVE HORMONAL PEPTIDES: D-3-PAL[6]-LHRH

Karl Folkers, Austin, Tex.; Xu Jie-Cheng, Shanghai, China, and Cyril Y. Bowers, New Orleans, La., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 26, 1985, Ser. No. 727,711
Int. Cl.[4] C07K 7/20
U.S. Cl. 530—313 4 Claims

1. pyroGlu-His-Trp-Ser-Tyr-D-3-Pal-Leu-Arg-Pro-Gly-NH_2.

4,642,333

IMMUNOLOGICALLY REACTIVE NON-GLYCOSYLATED AMINO ACID CHAINS OF GLYCOPROTEIN B OF HERPES VIRUS TYPES 1 AND 2

Stanley Person, 600 Locust La., State College, Pa. 16801

Continuation-in-part of Ser. No. 532,996, Sep. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 506,986, Jun. 23, 1983, abandoned. This application Jun. 20, 1984, Ser. No. 622,496
Int. Cl.[4] C07K 13/00
U.S. Cl. 530—350 2 Claims

1. A substantially pure non-glycosylated amino acid chain comprising a sequence corresponding to that occurring in glycoprotein B of HSV-1 or HSV-2 virus which is antigenic to HSV-1 of HSV-2, which contains no more than 750 amino acid residues, and which includes amino acid residues 135–649 inclusive referened to Table 2.

4,642,334

HYBRID DNA PREPARED BINDING COMPOSITION

Kevin W. Moore, San Bruno, and Alejandro Zaffaroni, Atherton, both of Calif., assignors to DNAX Research Institute of Molecular and Cellular Biology, Inc., Palo Alto, Calif.

Continuation of Ser. No. 358,414, Mar. 15, 1982, abandoned. This application Dec. 5, 1983, Ser. No. 558,551

Int. Cl.[4] A61K *39/395*

U.S. Cl. 530—388 6 Claims

1. A specific binding composition ("rFv") comprising two polypeptide chains having substantially the same amino acid sequence of at least a portion of the variable region, without constant region amino acids, of a mammalian immunoglobulin, said immunoglobulin having binding specificity to a predetermined ligand, wherein said polypeptide chains are prepared by expression of a DNA sequence coding for the variable region, said expression occurring in the absence of expression of a DNA sequence coding for natively associated constant region, and wherein said two polypeptide chains combine to form the rFv which has a high affinity and specificity for said predetermined ligand.

4,642,335

ANTHRACYCLINE COMPOUNDS BOUND TO HYDROPHILIC POLYPEPTIDES

Shigeyoshi Miyashiro, Yokohama; Takao Kida, Yokosuka; Tsuyoshi Shiio, Kamakura, and Hiroshiro Shibai, Chigasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 28, 1985, Ser. No. 738,352

Claims priority, application Japan, May 22, 1984, 59-101673

Int. Cl.[4] C07K *17/02, 17/06*

U.S. Cl. 530—409 17 Claims

1. An anti-tumor composition comprising effective amounts of each of an anthracycline compound and a hydrophilic peptide having a molecular weight in the range of from 10,000–15,000, and anthracycline compound and said peptide being bonded by hydrogen bonding or ionic bonding or a combination thereof, and wherein said anthracycline compound is selected from the group consisting of adriamycin, daunomycin, aclacinomycin, γ-rhodomycin Y and cosmomycin A, and said hydrophilic peptide is selected from the group consisting of neocarzinostatin-apoprotein, macromycin-apoprotein, sporamycin-apoprotein, auromycin-apoprotein, AN-7A-apoprotein, AN-7B-apoprotein, AN-7D-apoprotein and AN-3-apoprotein.

4,642,336

AMMONIUM LIGNOSULFONATES

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 10, 1984, Ser. No. 679,901

The portion of the term of this patent subsequent to May 20, 2003, has been disclaimed.

Int. Cl.[4] C07G *1/00*

U.S. Cl. 530—500 8 Claims

1. A method of producing ammonium salts of lignosulfonates particularly suited for use as additives in dyestuff compositions and coal-water slurries comprising the steps of:

(a) ionizing a phenol component of a kraft lignin material in an alkaline liquid medium,

(b) methylolating the lignin material in the ortho position of the phenol component,

(c) lowering the pH of the liquid medium to an acid pH to precipitate the methylolated lignin material,

(d) washing the precipitated lignin material with water to remove inorganic salts and residual reactants therefrom, and

(e) sulfonating the washed, purified methylolated lignin material with an ammonium salt of a sulphur-oxygen containing compound in a liquid medium.

4,642,337

NOVEL URANIUM COMPOUNDS, THEIR PREPARATION PROCESS AND THEIR USE AS CATALYSTS FOR THE HYDROGENATION OF UNSATURATED ORGANIC COMPOUNDS

Lucile Arnaudet, Paris, and Gérard Folcher, Orsay, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

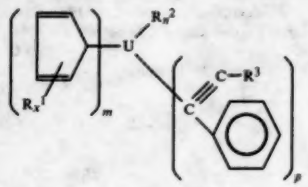
Filed Mar. 22, 1985, Ser. No. 715,176

Claims priority, application France, Mar. 29, 1984, 84 04928

Int. Cl.[4] C07F *5/00*; B01J *31/00*

U.S. Cl. 534—11 12 Claims

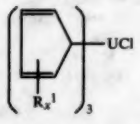
1. A uranium compound in accordance with formula:



(I)

in which R^1 represents a straight or branched alkyl group having 1 to 5 carbon atoms, R^2 is a straight or branched alkyl group having 1 to 5 carbon atoms, R^3 is a straight or branched alkyl group having 1 to 5 carbon atoms or a phenyl, naphthyl, tolyl or xylyl radical, x is equal to 0 or is an integer between 1 and 5, m is equal to 1, 2 or 3, n is equal to 0, 1 or 2, p is equal to 1 or 2, provided that m+n is equal to 3.

8. A catalyst for the hydrogenation of unsaturated organic compounds, wherein it is constituted by the product of the reaction of a compound of formula:



with LiR^2 and $C_6H_5C{\equiv}CR^3$, in which R^1 and R^2 represent a straight or branched alkyl group having 1 to 5 carbon atoms, R^3 represents a straight or branched alkyl group having 1 to 5 carbon atoms or a phenyl, naphthyl, tolyl or xylyl radical and x is equal to 0 or is an integer between 1 and 5, in a solvent constituted by an organic compound having at least one ether-oxide function.

4,642,338

FLUOROPHENOXYPHENOXYPROPIONATES AND DERIVATIVES THEREOF

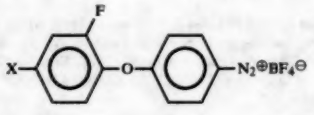
Richard B. Rogers, Midland, Mich., and B. Clifford Gerwick, III, Clayton, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 528,711, Sep. 1, 1983, Pat. No. 4,550,192. This application Mar. 7, 1985, Ser. No. 709,142

Int. Cl.[4] C07C *101/72*

U.S. Cl. 534—558 6 Claims

1. A compound of the formula



wherein X represents —Cl, —CF_3, —I, —Br, F, —OCF_3, —CF_2Cl, —CF_2H or —OCF_2CCl_2H.

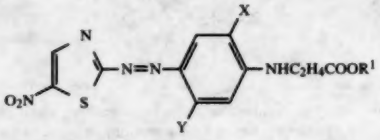
4,642,339

THIAZOLEAZOPHENYLAMINOETHYL CARBONYLOXY-C_8–C_{10}-ALKYL COMPOUNDS USEFUL AS DYES FOR POLYESTER FIBERS

Toshio Niwa; Kiyoshi Himeno, both of Yokohama, and Junji Yoshihara, Sagamihara, all of Japan, assignors to Research Association of Synthetic Dyestuffs, Tokyo, Japan

Continuation of Ser. No. 583,216, Feb. 24, 1984, abandoned. This application Oct. 18, 1985, Ser. No. 788,501
Claims priority, application Japan, Mar. 18, 1983, 58-45367
Int. Cl.[4] C09B *29/042, 29/085;* **D06P** *1/18, 3/54*
U.S. Cl. 534—650 **5 Claims**

1. A monoazo dyestuff of the formula:



wherein X represents hydrogen, chlorine, methyl, methoxy or ethoxy; Y represents methyl, acetylamino or propionylamino; and R^1 represents C_8–C_{10} alkyl.

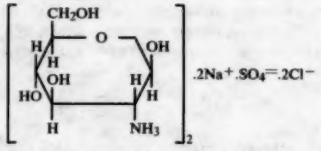
4,642,340

STABLE COMPOUNDS OF GLUCOSAMINE SULPHATE

Paolo Senin; Francesco Makovec, both of Monza, and Luigi Rovati, San Fruttuoso di Monza, all of Italy, assignors to Rotta Research Laboratorium S.p.A., Milan, Italy

Filed Apr. 30, 1982, Ser. No. 373,542
Claims priority, application Italy, Apr. 30, 1981, 67596 A/81
Int. Cl.[4] C07H *5/06*
U.S. Cl. 536—55.2 **5 Claims**

1. Mixed salt of glucosamine sulphate and sodium chloride corresponding to the formula:



said mixed salt being in the form of a crystalline powder having a melting point above 300° C.

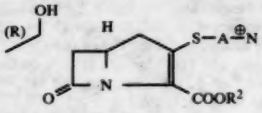
4,642,341

CARBAPENEM ANTIBIOTICS

Choung U. Kim, Manlius, and Peter F. Misco, Jr., Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

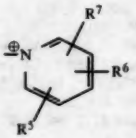
Division of Ser. No. 471,379, Mar. 8, 1983, which is a continuation-in-part of Ser. No. 366,910, Apr. 9, 1982, abandoned. This application Aug. 19, 1985, Ser. No. 766,624
Int. Cl.[4] C07D *487/04;* **A61K** *31/40*
U.S. Cl. 540—350 **48 Claims**

1. A compound of the formula



wherein A is cyclopentylene, cyclohexylene or C_2–C_6 alkylene optionally substituted by one or more C_1–C_4 alkyl groups; R^2 is hydrogen, an anionic charge or a conventional readily removable carboxyl protecting group, provided that when R^2 is hydrogen or a protecting group, there is also present a counter ion; and

represents a radical of the formula



in which R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl substituted by a hydroxy group, C_1–C_4 alkylthio, amino, carboxy and carbamoyl; or a pharmaceutically acceptable salt thereof.

4,642,342

AZETIDINEDIONE URETHANES

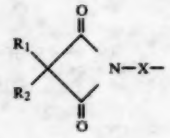
Shenghong A. Dai, Wallingford, Conn., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 608,005, May 7, 1984, Pat. No. 4,576,747. This application Dec. 20, 1985, Ser. No. 811,854
Int. Cl.[4] C07D *205/08, 403/14, 403/12*
U.S. Cl. 540—356 **8 Claims**

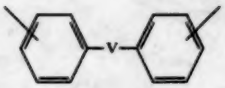
1. An azetidinedione urethane having the formula

$$(A—NHCOO)_mR_2$$

wherein each A represents the group



wherein R and R_1, when taken individually, are independently selected from the group consisting of hydrogen and hydrocarbyl having from 1 to 18 carbon atoms, and, when taken together with the carbon atom to which they are attached, represent a cycloalkane residue having 4 to 6 ring carbon atoms, inclusive, X is a divalent hydrocarbon radical having from 2 to 36 carbon atoms and divalent radicals having the formula



wherein V is selected from the group consisting of —CO—, —O—, —SO_2—, and alkylene having 1 to 4 carbon atoms, m has a value falling within the range of from about 1 to about 8, and R_2 is the residue of a primary or secondary hydroxyl compound having a molecular weight from about 32 to about 5000 and selected from the group consisting of aliphatic, aromatic, and cycloaliphatic mono-alcohols and polyols having a functionality of from 2 to 8.

4,642,343

FUSED AROMATIC OXAZEPINONES, THIAZEPINONES, DIAZEPINONES AND SULFUR ANALOGS THEREOF

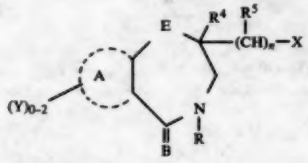
Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 746,091, Jun. 18, 1985, Pat. No. 4,592,866, which is a continuation-in-part of Ser. No. 652,058, Sep. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 527,559, Aug. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 431,500, Sep. 30, 1982, abandoned. This application Mar. 3, 1986, Ser. No. 835,837

Int. Cl.[4] C07D *243/14, 281/08, 498/04*

U.S. Cl. 540—488 **104 Claims**

1. A compound of the formula:



wherein;

A represents an aromatic or heterocyclic ring system having two of its carbon atoms held mutually with the oxazepine, thiazepine or diazepine moiety selected from the group consisting of benzene, a naphthalene, a quinoline, a pyridine in any of its four positions, any of which ring systems are optionally substituted by one or two Y radicals selected from the group consisting of halo, loweralkyl, loweralkoxy, diloweralkylamino, nitro or trifluoromethyl;

E is selected from oxygen sulfur or

B is selected from oxygen or sulfur;

R is selected from the group consisting of loweralkyl, cycloalkyl or phenyl-loweralkyl wherein phenyl is optionally substituted by one or two radicals selected from halo, loweralkyl, loweralkoxy, nitro or trifluoromethyl;

n is 1 or 2;

R^4 and R^5 are selected from hydrogen or loweralkyl (1–5C);

X is halogen selected from chlorine, bromine, cyano or 1-phthalimido; the optical isomers thereof and the acid addition salts thereof.

42. The compound of claim 1 which is 2-(2-chloroethyl)-2,3-dihydro-4-methyl-9-(trifluoromethyl)-1,4-oxazepino[6,7-c]quinolin-5(4H)-one or an acid addition salt thereof.

4,642,344

POLYAMINES

Manfred Hajek; Herbert Salzburg, both of Cologne, and Heinz Ziemann, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

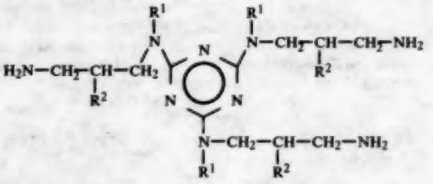
Filed Jan. 11, 1985, Ser. No. 690,445

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1984, 3401675

Int. Cl.[4] C07D *251/70*

U.S. Cl. 544—196 **3 Claims**

1. A polyamine corresponding to the formula



wherein

R^1 represents an alkyl group having 1 to 6 carbon atoms, a cyclohexyl group or a phenyl group and

R^2 represents hydrogen or a methyl group.

4,642,345

6,7-DIHYDRO-3H-IMIDAZO[1,2-a]-PURINE-9(4H)-ONES

Davis L. Temple, Jr., Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 178,201, Aug. 14, 1980, Pat. No. 4,404,380, which is a division of Ser. No. 17,771, Mar. 5, 1979, Pat. No. 4,298,734, which is a continuation-in-part of Ser. No. 869,203, Jan. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 768,291, Feb. 14, 1977, abandoned. This application Sep. 6, 1983, Ser. No. 529,797

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.[4] C07D *487/12*

U.S. Cl. 544—251 **1 Claim**

1. A compound selected from the group consisting of

4-[(3-chlorophenyl)methyl]-6,7-dihydro-3H-imidazo[1,2-a]purin-9(4H)-one,

4-[(2-chlorophenyl)methyl]-6,7-dihydro-3H-imidazo[1,2-a]purin-9(4H)-one,

4-[(4-fluorophenyl)methyl]-6,7-dihydro-3H-imidazo[1,2-a]purin-9(4H)-one,

4-[(3,4-dichlorophenyl)methyl]-6,7-dihydro-3H-imidazo[1,2-]purin-9(4H)-one,

1-butyl-4-[(4-chlorophenyl)methyl]-6,7-dihydro-3H-imidazo[1,2-a]purin-9(4H)-one,

4-[(4-chlorophenyl)methyl]-2-ethyl-6,7-dihydro-3H-imidazo[1,2-a]purin-9(4H)-one,

4-[(2-chlorophenyl)methyl]-2-(1-methylethyl)-6,7-dihydro-3H-imidazo[1,2-a]purin-9(4H)-one,

6,7-dihydro-4-(phenylmethyl)-3H-imidazo[1,2-a]-purin-9(4H)-one,

4-[2-(4-chlorophenyl)ethyl]-6,7-dihydro-3H-imidazo[1,2-a]purin-9(4H)-one,

6,7-dihydro-4-(3-phenylpropyl)-3H-imidazo[1,2-a]purin-9(4H)-one,

4-[(4-chlorophenyl)methyl]-6,7-dihydro-1-methyl-1H-imidazo[1,2-a]purin-9(4H)-one,

4-[(4-chlorophenyl)methyl]-6,7-dihydro-1,2-dimethyl-1H-imidazo[1,2-a]purin-9(4H)-one,

4-[(4-chlorophenyl)methyl]-6,7-dihydro-2,6,6-trimethyl-3H-imidazo[1,2-a]purin-9(4H)-one.

4,642,346

ANHYDROUS CRYSTALLINE 9-(1,3-DIHYDROXY-2-PROPOXYMETHYL)GUANINE

Tai W. Chan, Palo Alto, and Huong T. Nguyen, Saratoga, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 24, 1985, Ser. No. 747,631
Int. Cl.[4] C07D 473/02; A61K 31/52
U.S. Cl. 544—276 **13 Claims**

1. Anhydrous crystalline 9-(1,3-dihydroxy-2-propoxymethyl)guanine.

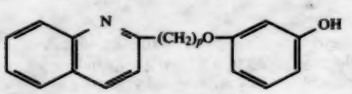
4,642,347

3(2-QUINOLINYLALKOXY)PHENOLS

Anthony F. Kreft, III, Devon; Thomas W. Pattison, King of Prussia, and John H. Musser, Malvern, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 21, 1985, Ser. No. 736,618
Int. Cl.[4] C07D 215/16
U.S. Cl. 546—181 **2 Claims**

1. A compound having the formula:



wherein p is 1–4, and the pharmaceutically acceptable salts thereof.

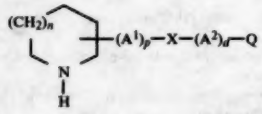
4,642,348

N-(AMINO)ALKYL)-1-PYRROLIDINE, 1-PIPERIDINE AND 1-HOMOPIPERIDINECARBOXAMIDES (AND THIOCARBOXAMIDES) WITH SULFUR LINKED SUBSTITUTION IN THE 2, 3 OR 4-POSITIONS

James R. Shanklin, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 598,582, Apr. 10, 1984, abandoned. This application Jul. 1, 1985, Ser. No. 750,180
Int. Cl.[4] C07D 211/46
U.S. Cl. 546—216 **40 Claims**

1. A compound selected from the group having the formula:



wherein;

n is selected from zero, one or two;

A^1 and A^2 are selected from straight or branched-chain alkalenes having 1 to 8 carbon atoms and p and d are selected from zero or one with the proviso that when the $—(A^1)_p—X—(A^2)_d—Q$ radical is in the 2-position, p is at least one;

X is selected from —S—, —S(O)— or $—S(O)_2—$;

Q is selected from

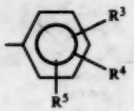
(1) 1 or 2-naphthyl,

(2) 2,3-dihydro-1H-inden-4-yl or 2,3-dihydro-1H-inden-5-yl,

(3) biphenyl,

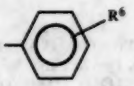
(4) phenyl,

(5)



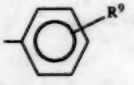
wherein R^3 is selected from fluorine, chlorine, bromine, iodine, loweralkyl (1–8 carbons), loweralkoxy (1–8 carbons), trifluoromethyl, hydroxy, cyano or nitro, R^4 is selected from hydrogen, fluorine, chlorine, bromine, iodine, methyl, ethyl, isopropyl, methoxy, ethoxy and nitro and R^5 is selected from hydrogen, methyl, ethyl, methoxy, ethoxy, methylthio and phenylthio,

(6)



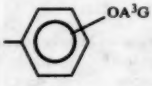
wherein R^6 is selected from $—NR^7R^8$, $—C(O)NR^7R^8$, $—(CH_2)_bNR^7R^8$, $—B—(CH_2)_bNR^7R^8$ or $—B—(CH_2)_bOR^7$ wherein B is selected from —O—, —S—, —S(O)— or $—S(O)_2—$, b is 2 or 3 and R^7 and R^8 are selected from hydrogen, loweralkyl (1–8 carbons) and may be the same or different,

(7)



wherein R^9 is selected from $—SR^{10}$, $—S(O)R^{10}$ and $—S(O_2)R^{10}$ wherein R^{10} is selected from loweralkyl (1–8 carbons) and phenyl with the proviso that X must be $—S(O)_2—$, or,

(8)



wherein A^3 is selected from straight or branched-chain alkalenes (2–8 carbons) and G is selected from loweralkoxy (1–8 carbons) or $—NR^{11}R^{12}$ wherein R^{11} and R^{12} are selected from hydrogen, loweralkyl (1–8 carbons), phenyl and phenyl-loweralkyl, (7–14 carbons) and may be the same or different, and the acid addition salts and hydrates thereof.

4,642,349

PROCESS FOR MAKING AROMATIC ETHERS

James M. Renga, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 187,688, Sep. 16, 1980, abandoned. This application May 24, 1982, Ser. No. 381,239
Int. Cl.[4] C07D 213/61; C07C 41/16, 41/01
U.S. Cl. 546—302 **10 Claims**

1. A process for making an aryl ether of the empirical formula $Ar_nO_pR'_m$ which comprises contacting an aryl lower alkyl carbonate of the formula $Ar(OCO_2R)_m$ with an organic halide of the formula $R'X_n$ wherein Ar is a carbocyclic or heterocyclic aromatic group having a valence of m, R is a lower alkyl or halogenated lower alkyl group, R' is an aliphatic, cycloaliphatic, aromatic, or heterocyclic group having

a valence of n, m and n each represent an integer from one to three, p is an integer equal to the product of m and n, and X is Cl, Br, or I, in the presence of a catalytic amount of an initiator at about 50° C.–250° C. and separating said aryl ether from the resulting reaction mixture.

4,642,350

NOVEL PROCESS FOR PREPARATION OF BENZOTRIAZOLES USING ARYLDIOLS AND QUINONES

Alexander Davatz, Bubendorf, and Tibor Somlo, Birsfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 616,322, May 31, 1984, abandoned. This application Dec. 18, 1985, Ser. No. 810,544

Claims priority, application Switzerland, Jun. 1, 1983, 2986/83

Int. Cl.⁴ C07D *249/20*

U.S. Cl. 548—260 **8 Claims**

1. A process for preparing a 2-(2-hydroxyphenyl)-2H-benzotriazole from the corresponding 2-nitro-2'-hydroxyazobenzene, which consists essentially of

reducing said 2-nitro-2'-hydroxyazobenzene in the presence of a strongly basic medium and in the presence of an alcohol having more than one carbon atom and of a catalyst selected from the group consisting of the benzodiols, the naphthodiols, said benzodiols or said naphthodiols substituted by alkyl or by halogen, the benzoquinones, said benzoquinones substituted by alkyl or by halogen, the naphthoquinones and said naphthoquinones substituted by halogen, by hydroxyl, by alkyl, by dialkylamino, by piperidino or by morpholino; at a temperature of 20° C. to 120° C.

4,642,351

PREPARATION OF N-SUBSTITUTED IMIDAZOLIDINONES AND N-SUBSTITUTED 2-THIONIMIDAZOLIDINONES

Edmund P. Woo, and Diana R. Price, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 20, 1983, Ser. No. 459,432

Int. Cl.⁴ C07D *233/36*

U.S. Cl. 548—317 **16 Claims**

1. A process for the preparation of N-substituted imidazolidinones and N-substituted 2-thionimidazolidinones which comprises contacting an oxazolidinone with a compound containing a nitrogen directly bonded to a carbonyl or a thiocarbonyl group in the presence of a Lewis acid catalyst or the hydrate of a Lewis acid catalyst under conditions such that an N-substituted imidazolidinone or N-substituted 2-thionimidazolidinone is prepared, wherein the compound containing a nitrogen directly bonded to a carbonyl or a thiocarbonyl group is an isocyanate or isothiocyanate or a compound wherein the nitrogen is reactive and the carbonyl or thiocarbonyl group is further bonded to a substituent by a bond which is cleavable under the reaction conditions, and the Lewis acid catalyst corresponds to the formula

$$MX_n$$

wherein

M is a group IB–VIIIB, IIIA or IVA element with the proviso that M is not C or Si;

X is a halogen; and

n is 2, 3 or 4.

4,642,352

ACYLAMINO MITOSANES

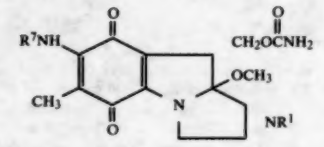
Takushi Kaneko; Henry S. L. Wong, and Terrence W. Doyle, all of Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,806

Int. Cl.⁴ C07D *487/14*; A61K *31/40*

U.S. Cl. 548—422 **23 Claims**

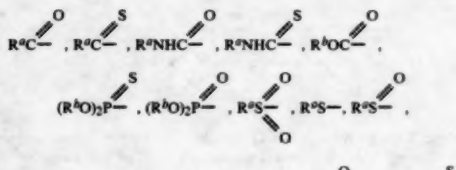
1. A compound having the formula



wherein

R^1 is selected from H, C_{1-6} alkyl, and R^7,

R^7 is selected from



wherein

R^a is selected from H, C_{1-6} alkyl, A-substituted C_{1-6} alkyl, C_{6-10} aryl, A-substituted C_{6-10} aryl, C_{7-17} aralkyl, A-substituted C_{7-17} aralkyl, C_{2-6} alkenyl, A-substituted C_{2-6} alkenyl, C_{2-6} alkynyl, A-substituted C_{2-6} alkynyl, C_{3-8} cycloalkyl, C_{4-10} cycloalkylalkyl,

R^b is selected from the group consisting of C_{1-6} alkyl, A-substituted C_{1-6} alkyl, C_{6-10} aryl, A-substituted C_{6-10} aryl, C_{7-17} aralkyl and A-substituted C_{7-17} aralkyl,

wherein said A substituent is selected from the group consisting of chlorine, bromine, fluorine, iodine, amino, tert.-beoxycarbonylamino, C_{1-6} alkoxy, C_{1-6} alkylamino, di(C_{1-6})alkylamino, C_{3-8} cycloalkylamino, C_{4-14} cycloalkylamino, thiol, C_{1-6} alkylthio, C_{1-6} alkyldithio, C_{6-10} arylthio, and C_{7-17} aralkylthio.

4,642,353

PHOTOCROSSLINKABLE POLYMERS HAVING THIOETHERIMIDYL SIDE GROUPS

Joseph Berger, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

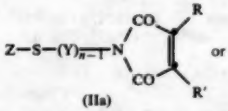
Continuation of Ser. No. 576,697, Feb. 3, 1984, abandoned, which is a division of Ser. No. 485,934, Apr. 18, 1983, Pat. No. 4,463,139. This application Feb. 20, 1986, Ser. No. 833,412

Claims priority, application Switzerland, Apr. 28, 1982, 2596/82

Int. Cl.⁴ C07D *491/052, 209/48, 207/244, 207/40*

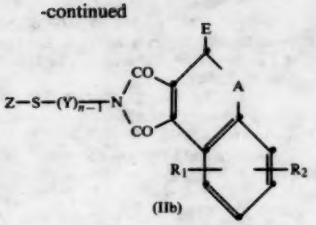
U.S. Cl. 548—431 **5 Claims**

1. A compound of the formula IIa or IIb



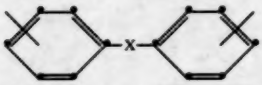
(IIa)

-continued



(IIb)

in which R and R' independently of each other are C_{1-4}-alkyl or together are unsubstituted or methyl-substituted trimethylene or tetramethylene, R_1 and R_2 independently of each other are hydrogen, halogen, C_{1-4}-alkyl or methoxy, A is $—CH_2—$, $—CH_2CH_2—$ or $—OCH_2—$ where the oxygen is bonded to the aromatic ring and E is hydrogen or A is —O— and E is $—CH_3$, n is 1 or 2, Z, is a halogen atom and Y is $—C_aH_{2a}—$ where a=1–12, C_{3-8}-cycloalkylene, C_{6-10}-arylene, C_{7-8}-aralkylene or -alkylarylene or



where X=a direct bond, —O—, —S— or $—CH_2$, where said substituents Y can also be substituted by alkyl of 1 to 4 carbon atoms, by alkoxy of 1 to 4 carbon atoms, by nitro or by halogen.

4,642,354

PROCESS FOR PRODUCING PHTHALIMIDES OF ALKALI METALS

Alexandr A. Ovchinnikov; Vladimir P. Dudin; Vyacheslav V. Konov; Vyacheslav I. Khlybov; Jury M. Rapoport; Boris N. Gorbunov; Evgenia S. Makarova; Valentin V. Davituliani, and Svetlana I. Zaitseva, all of Tambov, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Khimikatov Dlya Polimernykh Materialov, Tambov, U.S.S.R.

PCT No. PCT/SU84/00003, § 371 Date Aug. 26, 1985, § 102(e) Date Aug. 26, 1985, PCT Pub. No. WO85/03292, PCT Pub. Date Aug. 1, 1985

PCT Filed Jan. 23, 1984, Ser. No. 776,112

Int. Cl.[4] C07D *209/48*

U.S. Cl. 548—473 **11 Claims**

1. A process for producing alkali metal phthalimides which comprises:

reacting in a mixture, phthalimide and a solution of at least one member selected from the group consisting of alkali metal hydroxides and alkali metal alcoholates in an alcohol having 1 to 4 carbon atoms, at a temperature of from 50° to 100° C., at a pressure of from 0.07 to 0.005 MPa, wherein the alcohol is present at from about 10% to 60% by weight of the mixture.

4,642,355

PROLINE DERIVATIVES

Shizuo Nakamura, Naruto; Makoto Inoue, Tokushima, and Yoshiaki Tsuda, Anan, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

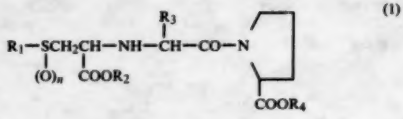
Filed Feb. 20, 1985, Ser. No. 703,365

Claims priority, application Japan, Feb. 24, 1984, 59-34701; May 18, 1984, 59-101588; Jun. 22, 1984, 59-129893; Feb. 19, 1985, 60-30834

Int. Cl.[4] C07D *207/00*; A61K *37/64*; C07K *5/06*

U.S. Cl. 548—533 **29 Claims**

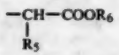
1. A proline derivative represented by the formula



(I)

wherein:

R_1 is C_5–C_{14} alkyl, C_2–C_6 alkenyl, C_3–C_8 cycloalkyl-C_1–C_6 alkyl or a group



(wherein R_5 is hydrogen, C_1–C_{14} alkyl or phenyl and R_6 is hydrogen or C_1–C_6 alkyl);

R_2 is hydrogen or C_1–C_6 alkyl;

R_3 is C_1–C_6 alkyl;

R_4 is hydrogen, C_1–C_6 alkyl or phenyl-C_1–C_6 alkyl; and

n is 0, 1 or 2,

and a pharmaceutically acceptable salt thereof.

4,642,356

FLUOROALKYLSILANES OR SILOXANES, THEIR SYNTHESIS AND USE

Jaroslav Langner, and Christian Weitemeyer, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

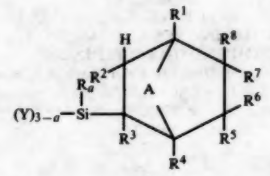
Filed Jun. 14, 1985, Ser. No. 745,258

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423608

Int. Cl.[4] C07D *307/00*; C07F *7/08, 7/10, 7/18*

U.S. Cl. 549—214 **14 Claims**

1. An organosilicon compound having the formula



R represents a hydrocarbon radical with 1 to 6 carbon atoms, or a phenyl radical;

R^1, R^2, R^3 and R^4 are the same or different and represent hydrogen or methyl radicals;

R^5, R^6, R^7 and R^8 are the same or different and represent hydrogen, fluorine or hydrocarbon radicals with 1 to 8 carbon atoms, or fluorinated hydrocarbon radicals, in which at least one R^5, R^6 R^7 or R^8 radicals must be a fluorine or a fluorinated hydrocarbon radical;

Y is a hydrolyzable radical, hydroxyl radical or organosiloxanyl radical;

A represents

in which R^9 may be the same or different and represents a hydrogen or a methyl radical; and

a has a value of 0, 1, 2, or 3.

4,642,357

CHROMOGENIC RECORDING MATERIALS

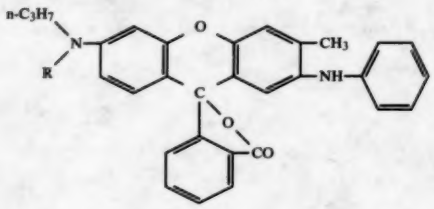
Masakichi Yahagi, Tokyo; Tetsuo Igaki, Kawagoe; Sinzi Yosinaka, Iwatsuki; Kousaku Morita, Saitama; Morikuni Saito, Tokyo, and Kimiaki Kinoshita, Kitamoto, all of Japan, assignors to Shin Nisso Kako Co., Ltd., Japan

Division of Ser. No. 583,019, Feb. 23, 1984, Pat. No. 4,590,498. This application May 20, 1986, Ser. No. 865,361

Int. Cl.[4] C07D *493/10*

U.S. Cl. 549—226 1 Claim

1. A compound of the formula I



(I)

wherein R is methyl or ethyl.

4,642,358

ACYL MODIFIED POLYPHENYLENE ETHER COMPOSITION

David F. Aycock, Glenmont, and Sai-Pei Ting, Delmar, both of N.Y., assignors to General Electric Company, Selkirk, N.Y.

Continuation-in-part of Ser. No. 654,922, Sep. 27, 1984, Pat. No. 4,600,741. This application Oct. 23, 1984, Ser. No. 663,745

Int. Cl.[4] C07C *93/06*

U.S. Cl. 549—245 9 Claims

1. A composition of matter comprising a combination of A. a polyphenylene ether molecule and B. compounds which contain in the molecule both (i) at least one group having the formula

where X is F, Cl, Br, I, OH,

where R is H or an alkyl or aryl radical and (ii) at least one carboxylic acid, acid anhydride, acid amide, imido, carboxylic acid ester, amino or hydroxyl group; wherein groups (i) and (ii) are covalently bonded through an alkyl or aryl linkage; and wherein the molecule containing groups (i) and (ii) is covalently bonded via said x group to said polyphenylene ether molecule.

4,642,359

PROCESS FOR PREPARING PYRYLIUM SALTS

Harivelo G. Rajoharison, and Christian M. Roussel, both of Marseilles, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 497,471, May 23, 1983, abandoned. This application Dec. 10, 1984, Ser. No. 755,658

Claims priority, application France, Jun. 8, 1982, 82 09928

Int. Cl.[4] C07D *309/32*

U.S. Cl. 549—356 20 Claims

1. A process for the preparation of the most substituted isomer of a polysubstituted pyrylium salt that can be obtained from an isoolefin or isoolefin precursor having at least 5 carbon atoms including a tertiary carbon atoms bearing at least 1 methyl substituent and 1 substituent which is substituted methylene, comprising diacylating said isoolefin or isoolefin precursor with a carboxylic acid anhydride in the presence of an acid having a Hammett acidity function, at about 22°–25° C. when pure, between −7.9 and −5.

4,642,360

METHOD FOR PRODUCING ETHYLENE OXIDE

Naohiro Nojiri, and Yukio Sakai, both of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 592,370, Mar. 22, 1984, abandoned. This application Oct. 1, 1985, Ser. No. 782,178

Claims priority, application Japan, Apr. 12, 1984, 58-63909

Int. Cl.[4] C07D *301/10*

U.S. Cl. 549—534 4 Claims

1. A method for producing ethylene oxide, which comprises: passing a feedstock gas of ethylene and molecular oxygen through a reactor containing a packing material of silica-alumina containing 10–80 weight percent of silica which has been sintered at 1200°–1500° C. in order to preheat said feed stock gas, and then through a catalyst bed which catalyzes the reaction of ethylene with molecular oxygen to produce said ethylene oxide.

4,642,361

ALPHA-TOCOPHEROL INTERMEDIATES

August Rüttimann, Arlesheim, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

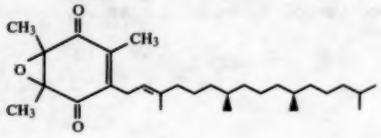
Filed Sep. 18, 1985, Ser. No. 777,125

Claims priority, application Switzerland, Oct. 11, 1984, 4871/84

Int. Cl.[4] C07D *303/32*

U.S. Cl. 549—546 1 Claim

1. A compound of the formula



IV

4,642,362

POLYMER BOUND CALIXARENES

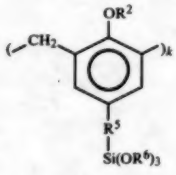
Stephen J. Harris, Ballinteer; John G. Woods, Stillorgan, and John M. Rooney, Naas, all of Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland

Continuation-in-part of Ser. No. 673,621, Nov. 21, 1984, Pat. No. 4,556,700, and a continuation-in-part of Ser. No. 575,257, Jan. 30, 1984, abandoned. This application Mar. 28, 1985, Ser. No. 717,251

Int. Cl.[4] C07F *7/10*

U.S. Cl. 556—419 1 Claim

1. A calixarene compound of the formula:



where R^2 is H, hydrocarbyl, $CH_2C(=O)OR^3$, $CH_2C(=O)R^3$

or C(=O)NHR^3; R^3 is hydrocarbyl; R^5 is alkylene or alkenylene; R^6 is alkyl or aryl; and k is 4–8.

4,642,363

METHOD OF PREPARING TRIALKYL ORGANO-OXYSILANES

Reiner Groh, Steyerberg; Hans-Joachim Kötzsch; Hans-Günther Srebny, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Aug. 27, 1985, Ser. No. 769,943

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431839

Int. Cl.^{4} C07F 7/18

U.S. Cl. 556—471 **5 Claims**

1. A process for the preparation of trialkylorganosilanes of the formula R_3SiOR', wherein R is an alkyl radical of 1 to 4 carbon atoms, R' is an alkyl, acyl, aryl or aroyl radical and hal is chlorine or bromine comprising reacting a trialkylhalogensilane of the formula R_3Sihal with an organic hydroxy compound of the formula R'OH, and removing hydrogen chloride formed in the reaction, wherein the organic hydroxy compound is added directly to the trialkylhalogensilane, which is maintained at its boiling temperature and in such amounts, that the molar ratio of hydroxy compound to trialkylhalogensilane does not exceed 1, said organic hydroxy compound being added such that it does not come into contact with the hydrogen chloride formed in the gas phase, subsequently maintaining the reaction mixture under column distillation conditions; distilling off any additionally formed hydrogen chloride and any excess of trialkylhalogensilane; and isolating the trialkylorganosilane.

4,642,364

UNSATURATED EICOSANOIC ACIDS

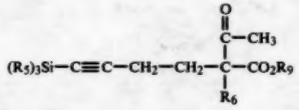
Ka-Kong Chan, Hopatcong; George W. Holland, and Perry Rosen, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 666,782, Oct. 31, 1984, Pat. No. 4,599,443, which is a division of Ser. No. 383,445, Jun. 1, 1982, Pat. No. 4,500,462, which is a division of Ser. No. 278,531, Jun. 29, 1981, Pat. No. 4,345,084. This application Mar. 17, 1986, Ser. No. 840,161

Int. Cl.^{4} C07F 7/08

U.S. Cl. 556—438 **5 Claims**

1. The compound of the formula:



wherein R_5 is lower alkyl; R_6 is hydrogen or fluorine and R_9 is lower alkyl.

4,642,365

METHOD FOR PRODUCTION OF 1,3,2-DIOXAPHOSPHOLES

Kenzo Naito, Soraku; Masayasu Kato, Ashiya, and Kazuo Tsukamura, Kawabe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

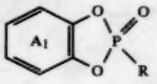
Continuation of Ser. No. 631,801, Jul. 17, 1985, abandoned, which is a division of Ser. No. 415,318, Sep. 7, 1982, abandoned. This application Nov. 7, 1985, Ser. No. 795,743

Claims priority, application Japan, Sep. 10, 1981, 56-143302; Jan. 18, 1982, 57-6668

Int. Cl.^{4} C07F 9/21

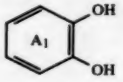
U.S. Cl. 558—83 **10 Claims**

1. A method of producing a 1,3,2,-dioxaphosphole of the formula



wherein

represents a benzene ring which may be substituted and R represents an aryl, alkoxy or aralkyloxy group which may be substituted, which comprises reacting a catechol compound of the formula



wherein

is as defined above, with a compound of the formula

wherein X is a halogen atom and R is as defined above, at a temperature not higher than about 30° C. in the presence of a base.

4,642,366

PROCESS FOR PREPARING METHYL PHOSPHONAMIDES

Milton L. Honig, Bronx, and Edward D. Weil, Hastings-on-Hudson, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 586,158, Mar. 5, 1984, Pat. No. 4,587,362, which is a continuation of Ser. No. 157,713, Jun. 9, 1980, Pat. No. 4,456,566, which is a division of Ser. No. 72,966, Sep. 6, 1979, Pat. No. 4,276,234, which is a division of Ser. No. 973,282, Dec. 26, 1978, Pat. No. 4,207,271, which is a division of Ser. No. 615,321, Sep. 22, 1975, Pat. No. 4,152,373. This application Feb. 13, 1986, Ser. No. 829,046

The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.

Int. Cl.[4] C07F 9/36

U.S. Cl. 558—138 5 Claims

1. A process for preparing methylphosphonamides which comprises heating a diaryl methylphosphonate with an amine in substantially equimolar amounts until phenol corresponding to the aryl groups of the diaryl methylphosphonate is released.

4,642,367

PROCESS FOR THE PREPARATION OF ALFA-L-ASPARTYL-L-PHENYL-ALANINE ALKYL ESTERS

Martino Finotto, Treviglio, Italy, assignor to Farchemia S.p.A., Treviglio, Italy

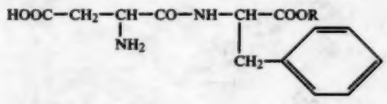
Filed Jul. 15, 1985, Ser. No. 755,063

Claims priority, application Italy, Aug. 1, 1984, 22177 A/84; Dec. 4, 1984, 23876 A/84; Apr. 9, 1985, 47942 A/85

Int. Cl.[4] C07C 101/32; C07K 1/06

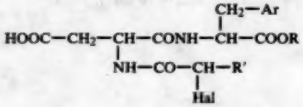
U.S. Cl. 560—40 8 Claims

1. Process for the preparation of alkyl esters of alfa-L-aspartyl-L-phenylalanine of the formula (I)



(I)

wherein R is a C_1–C_5 alkyl group, characterized in that alfa-haloacyl-alfa-L-aspartyl-L-phenylalanine alkyl esters of the formula (II)



(II)

wherein:

R is as above defined;

Ar is the phenyl group;

R′ represents hydrogen or a C_1–C_4, linear or branched alkyl group;

Hal represents chlorine, bromine or iodine,

are reacted with a compound selected from the group consisting of thiourea, cyanic acid salts, thiocyanic acid salts, dithiocarbamic acid salts, guanidine, 1,2-ethanedithiol, cysteamine, ethanolamine, ethylenediamine, 1,2-diaminobenzene, 1,2-dimercaptobenzene, pyrocatechol, o-aminophenol.

4,642,368

NOVEL ESTERS, THEIR PREPARATION, AND THEIR USE FOR CONTROLLING PESTS

Peter Hofmeister, Ludwigshafen; Rainer Buerstinghaus, Weinheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

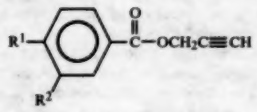
Filed Mar. 19, 1985, Ser. No. 713,644

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410543

Int. Cl.[4] C07C 69/76

U.S. Cl. 560—65 4 Claims

1. An ester of the formula I



(I)

where R^1 is OC_nH_{2n+1} (n=1 or 2), OCF_3, OCF_2CHF_2 or F and R^2 is H, or R^1 and R^2 together form $—O(CH_2)_mO—$ (m=1 or 2).

4,642,369

PROCESS FOR THE PRODUCTION OF DIMETHYL TEREPHTHALATE FROM P-XYLENE AND METHANOL

Rudolf Modic, Steyerberg; Jörg Porschen, Düren; Anton Schoengen, Witten, and Ralf Wirges, Niederkassel, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 4, 1985, Ser. No. 707,696

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407925

Int. Cl.[4] C07C 67/39

U.S. Cl. 560—77 8 Claims

1. A process for the production of dimethyl terephthalate from p-xylene and methanol by oxidation in a reactor, in the liquid phase with atmospheric oxygen in the presence of dissolved heavy metal compounds as a catalyst, of a mixture of p-xylene and a fraction containing predominantly methyl p-toluate, which fraction is recycled into the oxidation, to obtain an oxidation product containing primarily p-toluic acid and monomethyl terephthalate, at a temperature of 140°–170° C. and under a pressure of 4–8 bar; by esterification of the oxidation product with liquid and subsequently vaporized methanol brought to an elevated pressure, at a temperature of 220–280° C. and under a pressure of 20–25 bar in a reactor to obtain a raw ester containing primarily p-toluate and dimethyl terephthalate; by withdrawing the raw ester fraction and a methanol-containing vapor fraction from the esterification stage; and by distillatory separation of the raw ester into a p-toluate fraction which is recycled into the oxidation, a raw dimethyl terephthalate fraction which is subjected to further processing by recrystallization in methanol, and a residual fraction which is subjected to a thermal aftertreatment or a reactive treatment with methanol and is partially recycled into the process after a subsequent working-up step by distillation, characterized in that the esterification of the oxidation product is conducted with a methanol-containing vapor, brought by compression to elevated pressure and elevated temperature, which methanol-containing vapor has been obtained from the filtrate of the recrystallization of the raw dimethyl terephthalate fraction by vaporization or also by rectification of the methanol-containing vapor fraction and optionally additional methanol-containing process streams, under a pressure lying below the pressure utilized in the esterification reactor.

4,642,370

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACID ESTERS

Howard Alper, Ottawa, Canada; David J. H. Smith, Camberley, England, and James B. Woell, Ottawa, Canada, assignors to The British Petroleum Company p.l.c., London, England

PCT No. PCT/GB84/00251, § 371 Date Mar. 14, 1985, § 102(e) Date Mar. 14, 1985, PCT Pub. No. WO85/00596, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 16, 1984, Ser. No. 713,910

Claims priority, application United Kingdom, Jul. 16, 1983, 8319291; May 25, 1984, 8413369

Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—100 **13 Claims**

1. A process for the production of a carboxyic acid ester which process comprises reacting (i) carbon monoxide, (ii) a compound of the formula $M(OR)_x$ wherein M is either boron, silicon, aluminium, titanium or zirconium, x is the valency of M and R is a hydrocarbyl group and (iii) a hydrocarbyl halide, wherein the halide moiety is bromide, chloride or iodide, in the presence of a catalyst comprising one or more of the metals rhodium, iridium and cobalt added in either elemental or compound form.

4,642,371

PROCESS FOR THE PREPARATION OF DIESTERS OF DICARBOXYLIC ACIDS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed May 14, 1986, Ser. No. 862,928

Claims priority, application United Kingdom, Jun. 14, 1985, 8515140

Int. Cl.[4] C07C *67/38*

U.S. Cl. 560—114 **9 Claims**

1. A process for the preparation of a diester of a dicarboxylic acid having two or more carbon atoms than the unsaturated hydrocarbon used as a starting material, which comprises reacting an unsaturated hydrocarbon, carbon monoxide and an ester of nitrous acid with a solvent in the presence of a catalytic system formed by combining (1) a compound of a noble metal of Group VIII of the Periodic Table of the Element and (b) a vanadium salt and/or a titanium salt.

4,642,372

NOVEL PROCESS FOR PREPARATION OF 1-FURENYL-2,2-DIMETHYL-CYCLOPROPANE CARBOXYLIC ACID DERIVATIVES

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

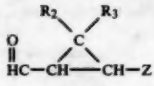
Continuation of Ser. No. 300,927, Sep. 10, 1983, abandoned. This application Jul. 29, 1985, Ser. No. 760,313

Claims priority, application France, Sep. 24, 1980, 80 20476

Int. Cl.[4] C07C *69/757*

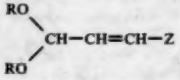
U.S. Cl. 560—124 **11 Claims**

1. A process for the preparation of cyclopropane carboxylic acid derivatives of the formula



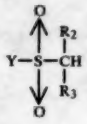
I

wherein Z is selected from the group consisting of —CN and $—COOR_1$, R_1 is alkyl of 1 to 6 carbon atoms and R_2 and R_3 are alkyl of 1 to 4 carbon atoms or taken together with the carbon atom to which they are attached form a carbon homocycle of 3 to 6 carbon atoms comprising reacting at low temperatures of −90° to −30° C. in a solvent in the presence of a strong base a compound of the formula



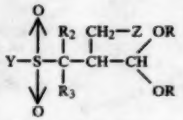
II

wherein Z has the above definition and R is alkyl of 1 to 6 carbon atoms or together form a polymethylene of 2 to 3 carbon atoms with a sulfone of the formula



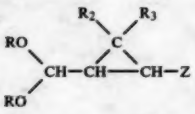
III

wherein R_2 and R_3 have the above definitions and Y is an aromatic group followed by aqueous treatment to obtain a compound of the formula



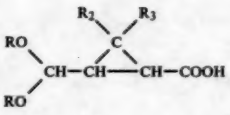
IV

wherein Y, R, R_2, R_3 and Z have the above definitions, reacting the latter at a low temperature in a solvent with a strong base while letting the temperature rise to obtain a compound of the formula



V

wherein R, R_2, R_3 and Z have the above definitions of the cis/trans configuration richer in the trans isomer and reacting the latter with a strong base in an aqueous media followed by acidification to obtain a compound of the formula



Va

wherein R, R_2 and R_3 have the above definitions having the same configuration as the compound of formula I, reacting the compound of formula Va with an acid agent in an aqueous media to obtain the corresponding acid of formula I with the same configuration as the compound of formula Va and optionally treating the latter with a weak base at room temperature to obtain the acid of formula I with a trans configuration.

4,642,373

SUBSTITUTED DODECAHYDROTRIPHEYLENES, AND DECAHYDROPYRROLO[1,2-F]PHENANTHRIDINES AS CNS AGENTS

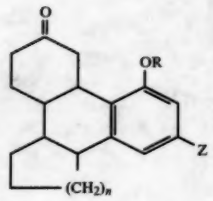
James F. Eggler, Stonington; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 358,765, Mar. 16, 1982, Pat. No. 4,473,704. This application Jul. 6, 1984, Ser. No. 628,543

Int. Cl.[4] C07C *69/616*

U.S. Cl. 560—139 7 Claims

1. A compound having the formula



wherein

n is 1 to 2;

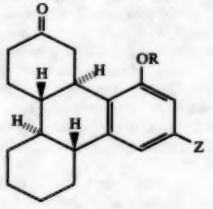
R is H, benzoyl, $(C_1–C_5)$alkanoyl or $—CO(CH_2)_mY$, wherein m is 1, 2, 3 or 4, Y is —COOH, or —NR′R″, R′ and R″ when taken separately are each independently H or $(C_1–C_4)$alkyl, and R′ and R″ when taken together with the nitrogen to which they are attached are piperidino, pyrrolo, pyrrolidino, morpholino or N-[$(C_1–C_4)$alkyl]-piperazino; and

Z is $(C_5–C_{13})$alkyl, $(C_5–C_{13})$alkoxy, $(C_5–C_{13})$alkoxyalkyl, $(C_8–C_{13})$pyridylalkyl, $(C_8–C_{13})$pyridylalkoxy, $(C_8–C_{13}$-)pyridyloxyalkyl, $(C_8–C_{13})$pyridylalkoxyalkyl, $(C_9–C_{14})$-phenylalkyl, $(C_9–C_{14})$phenylalkoxy, $(C_9–C_{14})$phenoxyal-kyl, or $(C_9–C_{14})$phenylalkoxyalkyl, wherein said phenyl groups are optionally substituted with a chloro or a fluoro;

a pharmaceutically-acceptable acid addition salt thereof when R is $—CO(CH_2)_mY$ and Y is —NR′R″; or

a pharmaceutically-acceptable cationic salt thereof when R is $—CO(CH_2)_mY$ and Y is —COOH.

6. A compound having the formula:



wherein R is acetyl and Z is 5-phenyl-2-pentyloxy.

4,642,374

OXIDATIVE CARBONYLATION TO MAKE DICARBOXYLIC ACID ESTERS

Andrew R. Lucy, Sandhurst, and George E. Morris, Thorpe, both of England, assignors to The British Petroleum Company p.l.c., London, England

PCT No. PCT/GB85/00195, § 371 Date Dec. 17, 1985, § 102(e) Date Dec. 17, 1985, PCT Pub. No. WO85/05356, PCT Pub. Date Dec. 5, 1985

PCT Filed May 9, 1985, Ser. No. 816,121

Claims priority, application United Kingdom, May 12, 1984, 8412197

Int. Cl.[4] C07C *67/38*

U.S. Cl. 560—204 20 Claims

1. A process for the production of an ester of a dicarboxylic acid which process comprises reacting an alkene with carbon monoxide, an alcohol and a dihydrocarbyl peroxide in the presence of an effective amount of a catalyst comprising a platinum group metal and a copper compound,

wherein the dihydrocarbyl peroxide has the formula $(RR^1R^2)C—O—O—C(RR^1R^2)$ where R, R^1 and R^2 are independently hydrogen or hydrocarbyl radicals selected from the group consisting of alkyl, aryl, aralkyl and alkaryl radicals having up to nine carbon atoms.

4,642,375

PROCESS FOR PREPARING DERIVATIVES OF THE MONOAMIDE OF TEREPHTHALIC ACID

Werner Ritschel, Hoechst Aktiengesellschaft P.O. Box 80 03 20, D-6230 Frankfurt am Main 80, Fed. Rep. of Germany

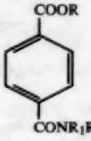
Continuation of Ser. No. 553,244, Nov. 18, 1983, abandoned. This application Oct. 24, 1985, Ser. No. 790,786

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1982, 3243148

Int. Cl.[4] C07C *99/00*

U.S. Cl. 562—442 4 Claims

1. A process for preparing terephthalic acid monoamide derivatives of the formula



in which R denotes hydrogen, an alkaline earth metal or alkali metal cation or methyl, R_1 denotes $C_8–C_{30}$-alkyl, and R_2 denotes hydrogen or $C_1–C_{30}$-alkyl, which comprises reacting dimethyl terephthalate with an amine of the formula

$$HNR_1R_2$$

in an approximately 1:1 molar ratio of dimethylterephthalate to said amine, essentially in about 1000 to about 1500 ml of methanol per mole of dimethylterephthalate, at the boiling point of methanol, in the presence of sodium methylate.

4,642,376

PROCESS FOR THE PREPARATION OF ALPHA-HYDROXYARYL-ALKANOIC ACIDS

Claudio Giordano, Vicenza; Fulvio Uggeri, Codogno, and Francesco Minisci, Milan, all of Italy, assignors to Zambon S.p.A, Vicenza, Italy

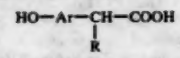
Filed Feb. 1, 1985, Ser. No. 697,450

Claims priority, application Italy, Feb. 3, 1984, 19438 A/84

Int. Cl.[4] C07C *65/24, 43/30*

U.S. Cl. 562—466 7 Claims

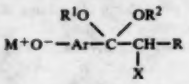
1. Process for the preparation of alpha-hydroxyaryl-alkanoic acids of formula



(I)

wherein Ar=phenyl or naphthyl, unsubstituted or substituted with C_1–C_3 alkyl; OH or C_1–C_3 alkoxy; halogen or phenyl

and R=H, straight or branched C_1–C_6 alkyl, characterized in that the rearrangement is carried out in an aqueous medium or in an organic solvent, at temperatures of from 0° to 100° C., of ketals of formula



(II)

wherein Ar and R are as defined above;

R_1 and R_2, equal or different, are a C_1–C_6 alkyl group, a C_3–C_6 alkenyl or alkynyl group, or bound together, form a saturated on unsaturated heterocyclic ring, comprising from 3 to 7 carbon atoms; X=Cl, Br, I; M=counter-ion of the phenolate, and that the product obtained is submitted to hydrolysis, without being separated from the reaction mixture.

4,642,377

PROCESS FOR PRODUCING TEREPHTHALIC ACID FROM P-XYLENE AND METHANOL BY WAY OF DIMETHYL TEREPHTHALATE

Rudolf Modic, Steyerberg; Jörg Porschen, Düren; Anton Schoengen, Witten, and Ralf Wirges, Niederkassel, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 4, 1985, Ser. No. 707,579

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407912

Int. Cl.⁴ C07C *51/09*

U.S. Cl. 562—483 **9 Claims**

1. A process for the production of terephthalic acid from p-xylene and methanol by way of dimethyl terephthalate obtained by oxidation, in the liquid phase with atmospheric oxygen in the presence of dissolved heavy metal compounds as the catalyst, of a mixture of p-xylene and a fraction containing predominantly methyl p-toluate, which fraction is recycled into the oxidation, to obtain an oxidation product containing primarily p-toluic acid and monomethyl terephthalate at a temperature of 140–170° C. and under a pressure of 4–8 bar; by esterification of the oxidation product in a reactor with liquid and subsequently vaporized methanol brought to an elevated pressure, at a temperature of 220–280° C. and under a pressure of 20–25 bar to obtain a raw ester containing primarily methyl p-toluate and dimethyl terephthalate; by withdrawing the raw ester fraction and a methanol-containing vapor fraction from the esterification reactor; by distillatory separation of the raw ester into a methyl p-toluate fraction and a fraction rich in terephthalic aldehyde methyl ester, which fractions are recycled into the oxidation, a raw dimethyl terephthalate fraction, and a residual fraction; by hydrolysis of the raw dimethyl terephthalate fraction with water, obtaining the thus-formed terephthalic acid and separation of a methanol-water mixture, characterized in that the methanol-containing vapor fraction and the methanol-water mixture are separated by rectification under elevated pressure and elevated temperature into a methanol-rich head fraction and an aqueous sump phase, the methanol formed at the head of the rectification stage is withdrawn in vapor phase under elevated pressure, and esterification of the oxidation product is conducted with the methanol-containing vapor brought by compression to esterification pressure and esterification temperature.

4,642,378

ARYLALKYL AMINES USEFUL FOR LOWERING INTRAOCULAR PRESSURE

Robin D. Clark, Palo Alto, and L. David Waterbury, San Mateo, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 11, 1985, Ser. No. 722,046

Int. Cl.⁴ C07C *127/19*

U.S. Cl. 564—51 **1 Claim**

1. The compound 3-[2-N-propyl-N-(3-ureidophenethyl-)aminoethyl]ureidobenzene.

4,642,379

INTERMEDIATES FOR ANTICONVULSANT AGENTS

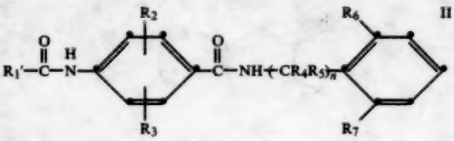
Edward E. Beedle, Indianapolis, and David W. Robertson, Greenwood, both of Ind., assignors to Eli Lilly and Company, Ind.

Filed Aug. 30, 1985, Ser. No. 771,455

Int. Cl.⁴ C07D *103/76*

U.S. Cl. 564—155 **5 Claims**

1. A compound of the formula



II

wherein R_1' is bromo- or chloro-substituted C_1–C_6 alkyl;

R_2, R_3, R_4, R_5, R_6, and R_7 are each independently hydrogen or methyl; and

n is 0 or 1.

4,642,380

PURIFICATION OF METHACRYLAMIDOPROPYLTRIMETHYLAMMONIUM CHLORIDE

David R. Livingston, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 23, 1983, Ser. No. 535,016

Int. Cl.⁴ C07C *103/44*

U.S. Cl. 564—206 **8 Claims**

1. A method for the purification of an impure methacrylamidopropyltrimethylammonium chloride which comprises contacting an aqueous solution of said impure chloride with hydrophobic/organophilic microporous crystalline silica for a period of time sufficient to significantly lower the impurities level, said microporous crystalline silica having a topological tetrahedral framework characterized by straight channels along a b-axis defined by ten membered oxygen rings with an elliptical cross-section of 5.7–5.8 Å by 5.1–5.2 Å interconnected by zigzag channels along an a-axis defined by ten membered oxygen rings with an aporoximately circular cross-section of about 5.4±2 Å.

4. A regenerative process for the purification of impure methacrylamidopropyltrimethylammonium chloride which comprises contacting the impure methacrylamidopropyltrimethylammonium chloride contaminated with allyl methacrylate and methacrylic acid with a hydrophobic/organophilic microporous crystalline silica under treating conditions to significantly lower the level of impurities in the said methacrylamidopropyltrimethylammonium chloride to a predetermined purity level and continuing such contact until the said hydrophobic/organophilic microporous crystalline silica is no longer effective for impurity removal to said predetermined impurity level and then:

(a) separating said thus spent hydrophobic/organophilic microporous crystalline silica from the methacrylamidopropyltrimethylammonium chloride,

(b) treating said spent hydrophobic/organophilic micropo-

rous crystalline silica with an organic solvent effective for contaminant removal for a period of time sufficient to substantially remove the contaminants from the said spent silica,

(c) thereafter treating additional quantities of said impure methacrylamidopropyltrimethylammonium chloride with said thus regenerated microporous crystalline silica,

(d) said organic solvent being selected from the group consisting of C_1–C_4 aliphatic alcohols and C_5–C_8 alkenes, and

(e) said microporous crysralling silica having a topological tetrahearal framework characterized by straight channels along a b-axis defined by ten membered oxygen rings with an elliptical cross-section of 5.7–5.8 Å by 5.1–5.2 Å interconnected by zigzag channels along an a-axis defined by ten membered oxygen rings with an approximately circular cross-section of 5.4±0.2 Å.

4,642,381

CATALYST AND METHOD FOR PRODUCTION OF METHYLAMINES

Kamil Klier, Bethlehem; Richard G. Herman, Whitehall, and Gamini A. Vedage, Bethlehem, all of Pa., assignors to Lehigh University, Bethlehem, Pa.

Continuation of Ser. No. 500,037, Jun. 1, 1983, Pat. No. 4,480,131. This application Nov. 28, 1983, Ser. No. 555,579

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.⁴ C07C *63/111*

U.S. Cl. 564—480 **10 Claims**

1. An alkali-containing copper/zinc oxide catalyst useful for the production of methanol consisting essentially of a binary system comprising a mixture of copper metal and zinc oxide prepared by:

(a) dissolving soluble salts of copper and zinc in an aqueous solution;

(b) coprecipitating the metal hydroxycarbonates and/or metal hydroxynitrates thereof by addition of a sufficient concentration of an aqueous basic carbonate;

(c) separating the precipitate, drying, and calcining same to form the equivalent metal oxides;

(d) reducing the calcined metal oxides in a hydrogen atmosphere substantially to convert copper oxide to lower valence states of copper;

(e) treating the resulting mixture in an oxygen-free atmosphere with a dilute, aqueous solution of an alkali metal hydroxide or an alkali metal salt; and

(f) evaporating the moisture in an oxygen-free environment to recover a dried alkali/copper/zinc oxide catalytic material.

4,642,382

1H-POLYALKYL-PHOSPHORINANES

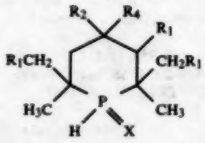
John D. Spivack; Stephen D. Pastor, both of Spring Valley, N.Y., and Paul Odorisio, Palisades Park, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 540,238, Oct. 11, 1983, Pat. No. 4,539,421. This application Jul. 18, 1985, Ser. No. 756,123

Int. Cl.⁴ C07F *9/50*, *9/53*

U.S. Cl. 568—12 **6 Claims**

1. The compound of formula II



(II)

wherein R_1 and R_2 independently are hydrogen or C_1–C_8 alkyl, X is —O—, —S— or a lone pair of electrons, R_4 is hydroxy or a group —NHR_3, whereby R_3 is hydrogen or C_1–C_{12} alkyl.

4,642,383

FAST COUPLING LEMON-YELLOW PHENOLIC COUPLERS

Robert C. Desjarlais, South Hadley, Mass., assignor to James River Graphics, Inc., South Hadley, Mass.

Filed Sep. 30, 1982, Ser. No. 428,457

Int. Cl.⁴ C07C *148/00*

U.S. Cl. 568—48 **2 Claims**

1. 2,2'-dihydroxy-3,3',6,6'-tetramethyl diphenyl sulfide.

4,642,384

PROCESS FOR THE PREPARATION OF DERIVATIVES OF PYRROLIDINE AND PIPERIDINE

Charles M. Leir, New Richmond, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Continuation of Ser. No. 269,070, Jun. 2, 1981, abandoned, which is a continuation of Ser. No. 158,992, Jun. 12, 1980, abandoned, which is a continuation of Ser. No. 21,331, Mar. 19, 1979, abandoned. This application Sep. 4, 1985, Ser. No. 772,470

Int. Cl.⁴ C07C *49/80*

U.S. Cl. 568—337 **3 Claims**

1. 2,5-Bis(2,2,2-trifluoroethoxy)acetophenone.

4,642,385

PREPARATION OF MONOCHLOROPINACOLONE

Dennis E. Jackman, Prairie Village, Kans., assignor to Mobay Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1985, Ser. No. 799,540

Int. Cl.⁴ C07C *45/63*

U.S. Cl. 568—393 **6 Claims**

1. In the reaction of pinacolone with chlorine in a solvent to produce monochloropinacolone, the improvement which comprises employing as the solvent methanol which contains HCl at the outset of the reaction whereby the amount of by-product dichloropinacolone produced is reduced.

4,642,386

PROCESS FOR THE PREPARATION OF PURE HYDRATES OF FLUORAL AND OF HEXAFLUOROACETONE FROM HEMIACETALS

Bernard Cheminal, Lyons; Henri Mathais, Saint Didier au Mont d'Or, and Marc Thomarat, Pierre-Benite, all of France, assignors to Atochem, France

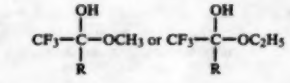
Filed Jul. 16, 1985, Ser. No. 755,702

Claims priority, application France, Jul. 18, 1984, 84 11384

Int. Cl.⁴ C07C *45/00*

U.S. Cl. 568—405 **8 Claims**

1. A process for the production of pure hydrates of polyfluoro materials, which process comprises reacting a hemiacetal having the formula:



wherein R is hydrogen or trifluoromethyl, with water in a distillation zone to form, respectively, the corresponding fluoral hydrate or hexafluoroacetone hydrate and methanol or ethanol, removing the methanol or ethanol at the top of the distillation zone, and recovering the fluoral hydrate or hexafluoroacetone hydrate at the bottom of the distillation zone.

4,642,387

PROCESS FOR THE PRODUCTION OF 3-CYCLOHEXENE-1-CARBOXALDEHYDE

Guenter Prescher, Hanau; Andreas Grund, Darmstadt; Heinrich Petsch, Hanau, and Georg Boehme, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 27, 1985, Ser. No. 813,904

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 3501665

Int. Cl.[4] C07C 45/69, 47/42

U.S. Cl. 568—446 11 Claims

1. A process for the production of 3-cyclohexene-1-carboxaldehyde by reaction of acrolein with butadiene at an elevated temperature and increased pressure, comprising carrying out the reaction between acrolein and butadiene continuously in a first stage circulation reactor to which acrolein and butadiene are fed continuously at temperatures between 80° C. and 160° C., to form a reaction mixture, whereby a part of the reaction mixture is guided in a circle, in which the weight ratio of the feed acrolein and butadiene starting substances per time unit to the reaction mixture circulated per time unit amounts to 1:5 to 1:60, and guiding the reaction mixture leaving the first stage circulation reactor, which mixture contains at least 50% by weight of 3-cyclohexene-1-carboxaldehyde, to a secondary reactor in which no circulation of the reaction mixture takes place and in which the reaction is completed at 100° to 240° C., and the reaction mixture obtained is subsequently separated by fractional distillation.

4,642,388

RHODIUM CATALYZED HYDROFORMYLATION OF ALPHA-SUBSTITUTED ALPHA-OLEFINS

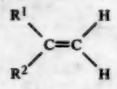
David A. Young, Baton Rouge, La., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Aug. 30, 1985, Ser. No. 771,429

Int. Cl.[4] C07C 45/50

U.S. Cl. 568—454 22 Claims

1. In a process for hydroformylation of an alpha-substituted alpha-olefin selected from the group consisting of compounds of the formula:



wherein R^1 and R^2 can be the same or different and comprise a member selected from the group alkyl, aryl, alkaryl, aralkyl, cycloalkyl,

—CHO and carboxylate, wherein X is alkyl of 1 to 20 carbon atoms in a hydroformylation reaction zone in the presence of a liquid rhodium triorgano phosphine catalyst system and in the presence of carbon monoxide and hydrogen to form the corresponding aldehydes, the improvement which comprises employing in the reaction zone a molar excess of at least one sterically hindered tricycloalkyl phosphine selected from the group consisting of compounds having the formula

wherein "n" is an integer of 1–12, inclusive; and maintaining in the reaction zone a reaction temperature of from about 80° to 200° C., and a total carbon monoxide and hydrogen pressure of from about 3500 to 14,000 kPa, whereby improved hydroformylation reaction rates are achieved.

4,642,389

PROCESS FOR THE MANUFACTURE OF CHLOROACETALDEHYDE DIALKYL ACETALS

Dennis Neigel, Whitehouse Station, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 30, 1986, Ser. No. 868,456

Int. Cl.[4] C07C 41/48, 41/58, 41/50

U.S. Cl. 568—604 16 Claims

1. A semi-continuous process for the manufacture of chloroacetaldehyde dimethyl acetal comprising the steps of:

(a) providing a vertical packed column, having side by side inlets, means for collecting a low-boiling distillate and a water-cooled condenser connected at the upper end and a cooled bottoms receiver connected at the lower end,

(b) introducing chlorine and a mixture of vinyl acetate and an excess of methanol at a constant rate and stoichiometric amounts with respect to chlorine and vinyl acetate through the separate inlets into a reaction site of the vertical packed column, wherein an exothermic reaction provides and maintains a temperature at the site of about 56°–58° C.,

(c) collecting a low boiling distillate formed from the vapors having a boiling point less than about 70° C., and

(d) collecting the crude acetal liquid product flowing downward from the reaction site in a cooled bottoms receiver.

4,642,390

PROCESS FOR THE MANUFACTURE OF ACETALS OF CHLOROACETALDEHYDE

Dennis Neigel, Whitehouse Station, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 30, 1986, Ser. No. 868,457

Int. Cl.[4] C07C 41/48, 41/50, 41/58

U.S. Cl. 568—604 8 Claims

1. A semi-continuous process for the manufacture of chloroacetaldehyde acetals comprising the steps of:

(a) providing a cooled vertical packed column or Graham condenser fitted at its lower end with a cooled batch reactor charged with a lower alcohol,

(b) introducing chlorine and vinyl acetate at a constant rate and stoichiometric amounts with respect to chlorine and vinyl acetate at the upper end of the column or condenser.

(c) cooling the column or condenser to maintain the temperature of the intermediate formed from the chlorine and vinyl acetate at about 25° to 50° C., at the point of exit from the column or condenser,

(d) directing the flow of intermediate into the batch reactor containing an excess of a lower alcohol to provide the crude acetal product.

4,642,391

HIGH MOLECULAR WEIGHT PRODUCTS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Continuation of Ser. No. 081,952, Oct. 4, 1979, abandoned. This application May 20, 1983, Ser. No. 495,914

Int. Cl.[4] C07C 43/11, 43/10

U.S. Cl. 568—624 1 Claim

1. A poly(oxy)alkylene adduct of a geminal bis(hydroxymethyl)octadecanol selected from the group consisting of 9,9-bis(-hydroxymethyl)octadecanol, 10,10-bis(hydroxymethyl)octadecanol and mixtures thereof.

4,642,392

CONJUGATED ALKADIENE TELOMERIZATION TO ORGANO-OXYALKADIENES

Ronnie M. Hanes, Milford, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Sep. 30, 1985, Ser. No. 781,590
Int. Cl.[4] C07C 41/06
U.S. Cl. 568—690 20 Claims

1. A method for the telomerization of a conjugated alkadiene comprising reacting a conjugated alkadiene with an organic hydroxy compound, said organic hydroxy compound being employed in an amount in excess of the stoichiometric amount required for the telomerization of said organic hydroxy compound with said conjugated alkadiene, said reaction occurring in the presence of a catalytically effective amount of a catalyst compound comprising

$$[PdR^1][YR_y^2]_2$$

where R^1 is any anionic group displaced by methanol except a halide; R^2 is a straight chain, branched chain or cyclic radical having from 1 to about 10 carbon atoms; Y is phosphorus or antimony; y is the valence of Y, the ligand:Pd ratio is maintained at from about 10:1 to about 1:1 during the reaction, said reaction being conducted in the substantial absence of oxygen and in the presence of an inert high boiling organic solvent, the boiling point of said solvent being greater than the boiling point of said organo-oxyalkadiene; separating said organo-oxyalkadiene from said catalyst and recycling said catalyst for the further telomerization of said conjugated alkadiene with said organic hydroxy compound.

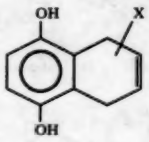
4,642,393

PROCESS FOR PREPARING 1,4-DIHYDROXY, 5,8-DIHYDRONAPHTHALENE AND RELATED COMPOUNDS

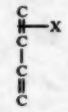
Yoshiyuki Okamoto, Fort Lee, N.J., and Richard Vicari, Astoria, N.Y., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1985, Ser. No. 708,655
Int. Cl.[4] C07C 39/14
U.S. Cl. 568—734 7 Claims

1. A process for preparing compounds of the formula:



wherein X is selected from halogen, 2 to 4 carbon acyl, 1 to 3 carbon alkyl and hydrogen which comprises reacting benzoquinone with a 1,3-butadiene compound of the formula:



wherein X is as previously defined, in the presence of a catalytic amount of a ferric salt catalyst.

4,642,394

PRODUCTION OF PROPANEDIOLS

Tessie M. Che, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 16, 1985, Ser. No. 755,633
Int. Cl.[4] C07C 29/132, 29/60, 31/20
U.S. Cl. 568—861 15 Claims

1. A process for the conversion of glycerol to lower oxygenated hydrocarbons which comprises reacting glycerol, carbon monoxide and hydrogen in a basic organic solvent medium in contact with a soluble catalyst composition containing tungsten and Group VIII metal components, to yield a product mixture comprising propanediols.

4,642,395

POISONING OF RESIN SUPPORTED CATALYST

Douglas L. Hunter, and Stanley E. Moore, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 18, 1985, Ser. No. 799,237
Int. Cl.[4] C07C 29/16
U.S. Cl. 568—883 16 Claims

1. A method of enhancing performance of a combined hydroformylation/reduction reaction of an olefin liquid feed in the presence of a resin-supported transition metal complex catalyst, the method comprising the steps of:

(a) preparing a resin-supported transition metal complex catalyst for use in a combined hydroformylation/reduction reaction substantially free of halides and halide salts in said metal complex catalyst; and

(b) introducing an olefin liquid feed to the resin-supported catalyst for conducting a combined hydroformylation/reduction reaction, in the presence of CO and H_2, wherein the olefin feed has a specified maximum limit of halide concentration sufficiently low to enable continued indefinite operation of the combined hydroformylation/reduction reaction process without halide poisoning.

4,642,396

PROCESS FOR SEPARATING NITROAROMATIC COMPOUNDS FROM SPENT NITRIC ACID

Richard V. C. Carr; Bernard A. Toseland, both of Allentown, Pa., and David S. Ross, Palo Alto, Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 7, 1984, Ser. No. 638,436
Int. Cl.[4] C07C 79/10; C07B 43/02
U.S. Cl. 568—934 8 Claims

1. In a process for extracting a dinitroaromatic compound selected from the group consisting of dinitrobenzene, dinitrotoluene and dinitroxylene from a reaction mixture comprising said dinitroaromatic composition, water, and nitric acid, said reaction mixture formed by reacting said dinitroaromatic composition using nitric acid only as the nitrating medium, which comprises the steps of:

forming an organic layer containing said dinitroaromatic composition and an aqueous layer containing water and nitric acid; and

decanting said dinitroaromatic composition from said aqueous layer, the improvement for enhancing the extraction of said dinitroaromatic composition from said aqueous layer which comprises the step of:

contacting the aqueous layer with a sufficient amount of nitric oxide under conditions for reacting with substantially all of said nitric acid for forming gaseous nitrogen dioxide and liquid water, said nitric oxide being present in an amount sufficient to react with a substantial amount of said nitric acid and thereby forcing said dinitroaromatic composition into said organic layer because of insolubility in said aqueous layer; and then,

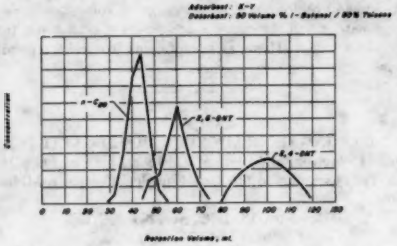
separating the organic layer from the aqueous layer.

4,642,397

PROCESS FOR SEPARATING ISOMERS OF DINITROTOLUENE

Hermann A. Zinnen, Evanston, and Thad S. Franczyk, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 1, 1985, Ser. No. 782,674
Int. Cl.[4] C07C 79/10
U.S. Cl. 568—934 12 Claims



1. A process for separating 2,4-dinitrotoluene from a feed mixture comprising 2,4-dinitrotoluene and 2,6-dinitrotoluene, said process comprising contacting said mixture at a temperature within the range from about 20° C. to about 200° C. and at a pressure to maintain liquid phase with an adsorbent comprising an L type zeolite whose cations have been exchanged with K, an X type zeolite whose cations have been exchanged with a cation selected from the group consisting of Na, Ca, Ba and K, or a Y type zeolite whose cations have been exchanged with a cation selected from the group consisting of Ca, Ba, K, Na, Li and Mg thereby selectively adsorbing said 2,4-dinitrotoluene, removing the remainder of said mixture from said adsorbent, and then recovering said 2,4-dinitrotoluene by desorption at a temperature within the range from about 20° C. to about 200° C. and at a pressure to maintain liquid phase with a desorbent material comprising a C_3 to C_5 alcohol, a ketone, an ester, or nitrobenzene.

4,642,398

PREPARATION OF FLUORONITROBENZENE COMPOUNDS IN DISPERSION OF POTASSIUM FLUORIDE

Gary L. Cantrell, Belleville, Ill., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Jan. 6, 1986, Ser. No. 816,481
Int. Cl.[4] C07C 79/12
U.S. Cl. 568—937 6 Claims

1. In a process for preparing a fluoronitrobenzene compound by reaction of a corresponding chloronitrobenzene compound with potassium fluoride in an aprotic polar organic solvent under substantially anhydrous halide-exchange conditions in the presence of a catalyzing amount of a phase-transfer catalyst,

the improvement which comprises effecting the reaction in a substantially anhydrous dispersion of utlra-fine particulate potassium fluoride in an aprotic polar organic solvent, said dispersion prepared by a method comprising

(a) preparing a solution of potassium fluoride in methanol,

(b) preparing a mixture by adding to said solution (i) an aromatic compound selected from aromatic hydrocarbons, aromatic chlorohydrocarbons and aromatic fluorohydrocarbons, said aromatic compound being an azeotrope former with methanol, and (ii) an aprotic polar solvent having a boiling point at a selected pressure at least 30° C. higher than the boiling point at said pressure of said aromatic compound, and

(c) distilling said mixture at said pressure to prepare a distillation residue consisting essentially of said dispersion.

4,642,399

METHOD FOR PRODUCING FLUORONITROBENZENE COMPOUNDS

Carl R. White, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Nov. 29, 1984, Ser. No. 676,117
Int. Cl.[4] C07C 79/12
U.S. Cl. 568—938 16 Claims

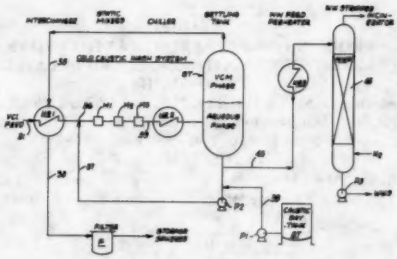
1. In a method for producing a fluoronitrobenzene compound by reacting a corresponding chloronitrobenzene compound with a fluoride salt in a reaction mixture comprising an aprotic, polar, organic solvent under halogen-exchange conditions in the presence of a catalyzing amount of a quaternary ammonium salt phase-transfer catalyst, the improvement comprising, in combination, (a) said fluoride salt consists essentially of an alkali metal fluoride salt and (b) said phase-transfer catalyst consists essentially of a teramethylammonium salt in an amount effective for catalyzing the reaction of said chloronitrobenzene compound with said alkali metal fluoride salt to produce said fluoronitrobenzene compound.

4,642,400

PROCESS FOR FINISHING VINYL CHLORIDE MONOMER

Joseph A. Cowfer, Medina, Ohio, and James E. Best, Paducah, Ky., assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 23, 1985, Ser. No. 779,337
Int. Cl.[4] C07C 17/38
U.S. Cl. 570—238 6 Claims



1. In a process for purifying HCl- and water-containing vinyl chloride containing from 1 to 500 parts per million (ppm) HCl and 100 ppm to 300 ppm water dissolved therein, so as to produce essentially dry vinyl chloride monomer containing essentially no HCl, the improvement comprising,

(a) contacting said vinyl chloride in the liquid phase with a strongly alkaline aqueous solution of an alkali metal hydroxide containing from about 5 to about 35% by wt of said alkali metal hydroxide, so as to form an intimate mixture of organic and aqueous phases at a temperature in the range below about 25° F. but above the freezing point of said solution, the amount of said solution being sufficient to neutralize said HCl and decrease the water in said vinyl chloride monomer to a concentration no greater than 100 ppm, and,

(b) separating said organic phase from said aqueous phase, whereby said vinyl chloride monomer is dry and essentially free from HCl.

4,642,401

PROCESS FOR THE PRODUCTION OF LIQUID HYDROCARBONS

Hubert Coenen, and Rainer Hagen, both of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 631,420

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326284

Int. Cl.[4] C07C *4/04*

U.S. Cl. 585—241 6 Claims

1. Process for the production of liquid hydrocarbons from pulverized wastes in the form of pulverized old tires, cable wastes, polyethylene wastes, polypropylene wastes, and mixtures thereof, consisting essentially of treating the pulverized old tires, cable wastes, polyethylene wastes, polypropylene wastes, and mixtures thereof, in a reactor at a temperature of 150° to 500° C. and a pressure of 20 to 300 bar with a solvent which is liquid at 1 bar and 20° C. to form a solvent phase charged with liquid hydrocarbons and a residue phase, the solvent being selected from benzene, naptha, toluene, xylene, ethylbenzene, water, and mixtures thereof, and the weight ratio of the wastes to the solvent being between 1:3 and 1:30; separating the solvent phase charged with the liquid hydrocarbons from the residue phase by gravity, resolving the separated solvent phase into components, by lowering the pressure or by lowering the pressure and temperature of the solvent phase to separate a gas fraction and several low boiling liquid hydrocarbons from the solvent phase, and by subjecting the solvent phase, from which the gas fraction and said several low boiling liquid hydrocarbons have been separated, to distillation to separate other hydrocarbons from the solvent phase; recovering solvent during the resolving of the separated solvent phase; and recycling the recovered solvent to the reactor.

4,642,402

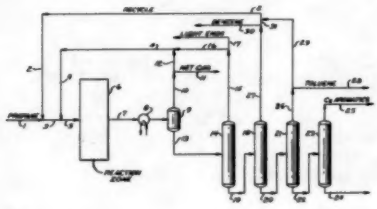
PROCESS FOR CONVERSION OF LIGHT ALIPHATIC HYDROCARBONS TO AROMATICS

Robert H. Jensen, Clarendon Hills, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 30, 1985, Ser. No. 814,830

Int. Cl.[4] C07C *12/02*

U.S. Cl. 585—411 19 Claims



1. In a hydrocarbon conversion process wherein a vapor phase feedstream comprising a C_2–C_5 aliphatic hydrocarbon is passed into a catalytic reaction zone containing a solid catalyst and converted into aromatic hydrocarbons comprising benzene, toluene and xylenes which are recovered from a reaction zone effluent stream; the improvement which comprises charging benzene and/or toluene into the reaction zone to increase the relative production of xylenes.

4,642,403

PRODUCTION OF AROMATICS FROM ETHANE AND/OR ETHYLENE

Edward A. Hyde, Send Marsh, and Timothy K. McNiff, Weybridge, both of England, assignors to The British Petroleum Company p.l.c., London, England

Continuation-in-part of Ser. No. 788,338, Oct. 17, 1985. This application May 8, 1986, Ser. No. 861,071

Claims priority, application United Kingdom, Nov. 16, 1984, 8429007

Int. Cl.[4] C07C *12/02*

U.S. Cl. 585—415 10 Claims

1. A process for producing aromatic hydrocarbons, said process comprising bringing into contact in the vapour phase at a temperature from 500°–750° C. a hydrocarbon feedstock containing at least 10% by weight of C_2 hydrocarbons with a catalyst composition comprising (i) an aluminosilicate loaded with gallium as a gallium compound and/or as gallium ions and having a silica to alumina molar ratio of at least 5:1, and (ii) a Group VIII metal selected from rhodium and platinum.

4,642,404

CONVERSION OF OLEFINS AND PARAFFINS TO HIGHER HYDROCARBONS

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 573,776, Jan. 23, 1984, Pat. No. 4,559,314, which is a continuation-in-part of Ser. No. 360,749, Mar. 22, 1982, abandoned. This application Oct. 25, 1985, Ser. No. 791,277

Int. Cl.[4] C07C *12/02*

U.S. Cl. 585—415 21 Claims

1. A process for converting a feedstock comprising C_2^+ olefins, C_2–C_7 paraffins or a mixture thereof to conversion product comprising C_5^+ hydrocarbon compounds which comprises contacting said feedstock at conversion conditions sufficient to convert said feedstock to said product with a catalyst composition prepared by a method which comprises forming a composite of a crystalline zeolite having a silica:alumina mole ratio of at least 100:1 and a Constraint Index from 1 to 12, a binder comprising alumina, and water, and contacting the composite with steam to enhance the activity of the catalyst.

4,642,405

PROCESS FOR THE PRODUCTION OF METHALLYLBENZENE AND ISOBUTENYLBENZENE AND THEIR P-SUBSTITUTED ALKYL DERIVATIVES

Manfred Kaufhold, Marl, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Feb. 18, 1986, Ser. No. 830,170

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1985, 3505156

Int. Cl.[4] C07C *5/09, 1/253*

U.S. Cl. 585—435 25 Claims

1. In a process for the production of a substantially pure mixture of methallyl-p-R-benzene (α-isomer), and the corresponding isobutenyl-p-R-benzene (β-isomer) by thermally cracking the corresponding p-R-neophyl chloride, wherein R is H or C_1–C_4-alkyl, the improvement comprising

thermally cracking the neophyl chloride compound in the presence of an effective amount of an inhibitor of free radical polymerization of olefins and isomerizing the formed β-olefin by heating it thereby forming the corresponding α-olefin.

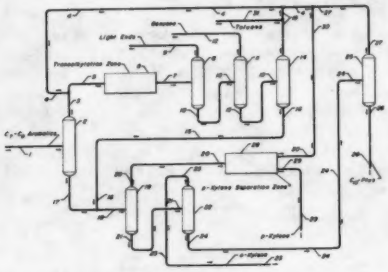
24. A process for isomerizing isobutenyl-p-R-benzene to methallyl-p-R-benzene comprising heating the former in the presence of a strong base, the temperature and base strength and amount being effective for said isomerization.

4,642,406

HIGH SEVERITY PROCESS FOR XYLENE PRODUCTION EMPLOYING A TRANSALKYLATION ZONE FOR XYLENE ISOMERIZATION

Robert J. Schmidt, Rolling Meadows, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 13, 1985, Ser. No. 775,982
Int. Cl.[4] C07C 5/22
U.S. Cl. 585—477 **13 Claims**



1. A process for the production of a desired xylene isomer which comprises the steps of:

(a) passing a hereinafter characterized first process stream, which comprises at least two xylene isomers, into an adsorptive xylene separation zone, withdrawing a product stream comprising the desired xylene isomer from the xylene separation zone and also withdrawing a raffinate steam comprising an undesired xylene isomer from the xylene separation zone;

(b) passing a first feed stream comprising toluene, a hereinafter characterized recycle stream and at least a portion of the undesired xylene isomer content of the raffinate stream into a catalytic transalkylation zone containing a nonmetal transalkylation catalyst and operated at high severity conditions including a hydrogen to hydrocarbon mole ratio above 2:1 and a temperature over 426 degress Centigrade, and forming a transalkylation zone effluent stream which comprises benzene, toluene, xylenes and C_9 aromatics;

(c) separating the transalkylation zone effluent stream by fractional distillation to yield a benzene-rich process stream which is withdrawn from the process as a product stream, a toluene-rich process stream, a xylene-rich process stream comprising two xylene isomers, and a second process stream comprising C_9 aromatics;

(d) recycling at least a portion of the toluene-rich process stream into the transalkylation zone as said recycle stream; and

(e) passing at least a portion of the xylene-rich process steam into the xylene separation zone as said first process stream.

4,642,407

METHANOL CONVERSION USING REACTIVATED ZEOLITE

Ralph M. Dessau, Edison, and George T. Kerr, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 608,737, May 10, 1984, abandoned, which is a division of Ser. No. 458,398, Jan. 17, 1983, Pat. No. 4,461,845. This application Nov. 12, 1985, Ser. No. 796,679
Int. Cl.[4] C07C 5/333
U.S. Cl. 585—640 **23 Claims**

1. A process for converting a feedstock comprising organic compounds selected from the group consisting of alcohol, carbonyl, ether and mixtures thereof to conversion product comprising hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a crystalline zeolite material having a silicon/aluminum atomic ratio of at least about 2, said catalyst composition having been deactivated by contact with steam and reactivated by the steps of

contacting said steam-deactivated catalyst composition with an aluminum compound vapor at a temperature of from about 100° C. to about 850° C., and thereafter

contacting said aluminum compound contacted catalyst composition with an aqueous acid solution of from about 0.001 molar to about 10 molar at a temperature of from about 20° C. to about 100° C.

4,642,408

METHOD FOR THE REMOVAL OF NICKEL, ALUMINUM AND CHLORINE FROM OLEFIN OLIGOMERS

Yves Chauvin, Le Pecq, and Dominique Commereuc, Meudon, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 22, 1985, Ser. No. 725,728
Claims priority, application France, Apr. 20, 1984, 84 06280
Int. Cl.[4] C07C 7/00, 7/10
U.S. Cl. 585—836 **10 Claims**

1. In a method for the removal of aluminum, nickel and chlorine compounds from a liquid reaction product obtained by dimerization or codimerization of mono-olefins having two to four carbon atoms, in the presence of a catalyst obtained by the interaction of a nickel compound soluble in a hydrocarbon with an organo-aluminum chloride, comprising the steps of:

(a) treating the liquid reaction product with anhydrous ammonia,

(b) treating the resultant product of step (a) with an aqueous solution of alkali metal hydroxide to form an organic phase and an aqueous phase and

(c) separating the resultant aqueous phase, and recovering a resultant organic phase containing dimerized or codimerized mono-olefins from which aluminum, nickel and chlorine have been removed,

the improvement comprising treating said liquid reaction product with oxygen or a gas containing oxygen before or during step (a), said improvement further comprising treating the product of step (a) with oxygen or a gas containing oxygen before or during step (b), all of said treating steps with oxygen or oxygen-containing gas being conducted by bubbling said oxygen through the liquid reaction product so as to ensure substantially uniform gas-liquid contact.

4,642,409

METHOD FOR SELECTIVE DEALKYLATION OF A DIALKYLBENZENE AT THE PARAPOSITION THEREOF

Hiroshi Sato; Norio Ishii, and Kenichi Hirose, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 10, 1986, Ser. No. 827,698
Int. Cl.[4] C07C 4/12
U.S. Cl. 585—486 **7 Claims**

1. A method for selectively dealkylating a 1,4-dialkylbenzene in a dialkylbenzene mixture in the presence of, as a catalyst, a crystalline zeolite having an SiO_2/Al_2O_3 molar ratio of at least 12/1 and a constrained index of 1 to 12, modified with a metal or metalloid oxide, wherein the crystalline zeolite is ion-exchanged with a treatment liquor containing a base ion selected from the group consisting of sodium ion, potassium ion, rubidium ion, and cesium ion and contains the base ion in an atomic ratio of 0.5/1 to 1.0/1 with respect to aluminum.

4,642,410

CATALYTIC POLY ALPHA-OLEFIN PROCESS

Frederick C. Loveless, Cheshire, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Mar. 14, 1985, Ser. No. 711,705
Int. Cl.[4] C07C 2/02
U.S. Cl. 585—524 6 Claims

1. A process for oligomerizing an alpha-olefin which comprises contacting a transition metal halide and an organic halide with an alpha-olefin and thereafter an alkyl aluminum compound in a reaction zone, the mole ratio of the active halogen to aluminum being from 2.5 to 25, and oligomerizing said alpha-olefin to form oligomers having a molecular weight of from about 500 to 5000.

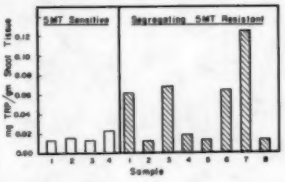
6. The process of claim 1 wherein the transition metal halide is titanium tetrachloride; the organic halogen compound is allyl chloride or t-butyl chloride; and the alkyl aluminum is triethyl aluminum or diethyl aluminum chloride, ethyl aluminum sesquibromide or ethyl aluminum sesquichloride.

4,642,411

TRYPTOPHAN OVERPRODUCER MUTANTS OF CEREAL CROPS

Kenneth A. Hibberd, Falcon Heights; Paul C. Anderson, Minneapolis, and Melanie Barker, Bloomington, all of Minn., assignors to Molecular Genetics Research and Development Limited Partnership, Minnetonka, Minn.

Continuation of Ser. No. 647,008, Sep. 4, 1984, Pat. No. 4,581,847. This application Feb. 21, 1985, Ser. No. 703,972
Int. Cl.[4] A01H 1/06
U.S. Cl. 800—1 23 Claims



1. A monocotyledonous seed having an endogenous free tryptophan content of at least about one-tenth milligram per gram seed weight and capable of germinating into a plant capable of producing seed having an endogenous free tryptophan content of at least about one-tenth milligram per gram dry seed weight.

4,642,412
PHOTO-ELECTRONIC CONVERSION APPARATUS WITH LIGHT PATTERN DISCRIMINATOR

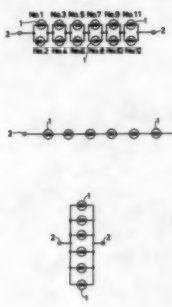
Shinichi Muramatsu, Higashiyamato; Toshikazu Shimada, Kokubunji; Sunao Matsubara, Tokorozawa; Haruo Itoh, Hino, and Nobuo Nakamura, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1985, Ser. No. 759,961

Claims priority, application Japan, Jul. 27, 1984, 59-155256

Int. Cl.[4] H01L *25/02, 27/14*

U.S. Cl. 136—244 **8 Claims**



1. A photo-electric conversion apparatus comprising light pattern discriminating means including a plurality of photovoltaic devices which are so connected electrically that when all of said photovoltaic devices are exposed to uniform light, the electric output is smaller than when all of said photovoltaic devices are exposed to light forming a predetermined pattern wherein a portion of all of said photovoltaic devices is illuminated and at least one other portion of said photovoltaic devices is non-illuminated at the same time in accordance with the predetermined light pattern.

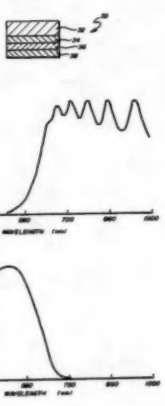
4,642,413
POWER GENERATING OPTICAL FILTER

Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Oct. 11, 1985, Ser. No. 786,579

Int. Cl.[4] H01L *31/06;* **G02B** *5/20*

U.S. Cl. 136—249 **37 Claims**



1. A power generating optical filter including a transparent substrate; a first substantially transparent electrode disposed atop at least designated areas of the substrate; a body of photovoltaic material adapted to generate electron hole pairs in response to the absorption of incident radiation, said body disposed atop at least the first electrode; and a second substantially transparent electrode disposed atop at least designated areas of the body of photovoltaic material; the improvement comprising, in combination:

the first and second electrodes and the body of photovoltaic material each fabricated to preselected thicknesses and from materials characterized by preselected indices of refraction for cooperatively establishing optical interference effects, whereby said filter transmits at least a portion of selected wavelengths of radiation incident thereupon substantially differing from wavelengths transmitted by that body of photovoltaic material alone.

30. A filter as in claim **1**, wherein said photovoltaic body includes at least one triad comprised of two layers of oppositely doped semiconductor material having a layer of substantially intrinsic semiconductor material interposed therebetween.

4,642,414
SOLAR CELL

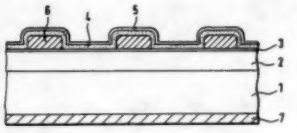
Klaus-Dieter Rasch, Talheim, and Gerhard Strobl, Stuttgart, both of Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed May 16, 1985, Ser. No. 734,843

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1984, 3420887

Int. Cl.[4] H01L *31/06*

U.S. Cl. 136—256 **16 Claims**



1. Solar cell, comprising: a semiconductor body consisting of a monocrystalline or polycrystalline semiconductor material and containing a pn-junction formed between a thin front surface zone of said semiconductor body which is of one conduction type and the remainder of said semiconductor body which is of the other conduction type; a front surface metallization; a rear surface contact; a layer for reducing front surface reflection overlying said front surface metallization; and an amorphous or microcrystalline silicon layer arranged underneath said layer for reducing front surface reflection.

4,642,415
JOINT FOR INTERCONNECTING TWO ELECTRICAL CABLES OF DIFFERENT TYPES

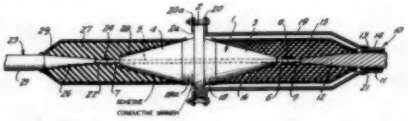
Gianmario Lanfranconi, Trezzo D'Adda, and Bernardino Vecellio, Milan, both of Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Dec. 16, 1985, Ser. No. 809,156

Claims priority, application Italy, Dec. 17, 1984, 24089 A/84

Int. Cl.[4] H02G *15/25*

U.S. Cl. 174—22 R **10 Claims**



1. Joint between two electrical cables of different types, each

of said cables having a conductor and the conductor of one of said cables being insulated with layers of solid insulation impregnated with a dielectric fluid and said one of said cables having a sheath around said insulation and the other of said cables having extruded solid insulation around the conductor thereof, said joint comprising:

a body of insulating material enclosing a metal rod except at end portions thereof, one end portion of said rod extending from one end of said body and the other end portion of said rod extending from the other end of said body;

first connecting means mechanically and electrically connecting said one end portion of said rod to the end of the conductor of said one of said cables having said layers of solid insulation;

further layers of solid insulation around said first connecting means, around a portion of the insulating material of said body adjacent said one end portion of said rod and around a portion of said layers of insulation of said one of said cables;

a conductive metal enclosure around said further layers of solid insulation and said first connecting means and connected in fluid-tight relation at one end with said sheath and at the opposite end with said body to provide a fluid-tight enclosure around said solid insulation and said first connecting means;

dielectric fluid of said one of said cables in said enclosure;

second connecting means mechanically and electrically connecting said other end portion of said rod to the end of the conductor of said other of said cables having said extruded solid insulation and

further solid insulation around said second connecting means, around a portion of the insulating material of said body adjacent to said other end portion of said rod and around a portion of the extruded solid insulation of said other of said cables adjacent to said second connecting means, said further solid insulation being without dielectric fluid and being bonded to said last mentioned portion of the insulation material of said body.

4,642,416

HIGH-FREQUENCY SEAL FOR CASING COVERINGS AND DOORS

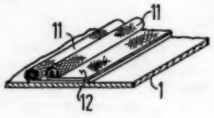
Ludwig Rogner, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,357

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407657

Int. Cl.[4] H05K *9/00*

U.S. Cl. 174—35 GC **2 Claims**



1. A radio-frequency seal of the type for enclosure coverings for electromagnetic interference suppression including doors for enclosures shielded from radio-frequencies, with an interference-suppressing sealing cord, the doors and the enclosures having surfaces, the seal including partially rolled up metallic mesh in the form of strips, which comes in contact with the surfaces to be sealed, the radio frequency seal comprising an interference-suppressor sealing cord having at least two partially rolled up metallic meshes in the form of strips, the unrolled portion of the metallic meshes lying one above the other while the rolled up portions of the metallic meshes lying next to one another, the interference-suppressing sealing cord is spot-welded on its unrolled portions to one of the surfaces to be sealed, and the metallic mesh lying above the other metallic mesh having the smaller width of the two metallic meshes.

4,642,417

CONCENTRIC THREE-CONDUCTOR CABLE

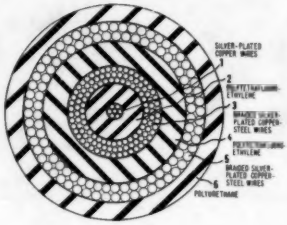
Klaus Ruthrof, Erlangen; Rudolf Körner, Leinburg, and Jürgen Dorner, Olching, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 25, 1985, Ser. No. 759,043

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1984, 3428087

Int. Cl.[4] H01B *7/34*

U.S. Cl. 174—36 **12 Claims**



1. Concentric three-conductor cable, comprising an inner conductor and outer conductors formed of braided strands, and insulating material separating said outer conductors from each other and from said inner conductor, each of said outer conductors being formed of a plurality of layers and the d-c resistance of said outer conductors being several times less than the d-c resistance of said inner conductor.

4,642,418

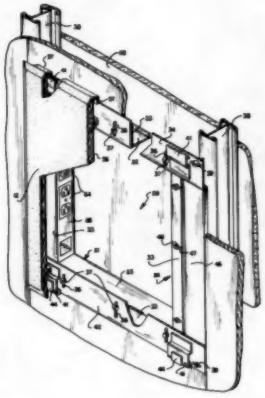
UTILITY MODULE FOR WALLS AND THE LIKE

Robert J. Menchetti, North Olmsted, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Continuation-in-part of Ser. No. 693,873, Jan. 23, 1985, Pat. No. 4,603,229. This application Jul. 29, 1985, Ser. No. 759,880

Int. Cl.[4] H02G *3/22*

U.S. Cl. 174—48 **12 Claims**



1. A service module for mounting in walls providing spaced and substantially parallel rows of wall panels, and in which one

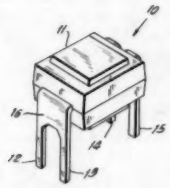
row provides a panel opening, comprising an open rectangular frame providing two pairs of opposed side walls, said side walls having a width substantially equal to the spacing between said rows of wall panels plus the thickness of said one wall panel row, face flange means extending outwardly from each side wall substantially along a face plane, said flange means being structured to abut against panel edges along sides of said opening and overlap panels above and below said opening, and a cover structured for removably mounting on said frame to close said module and provide access thereto, said flange means associated with one pair of said side walls being adjustably mounted on said frame to adjust for variations in spacing between said adjacent panel edges.

4,642,419

FOUR-LEADED DUAL IN-LINE PACKAGE MODULE FOR SEMICONDUCTOR DEVICES

Dennis Meddles, Lawndale, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Apr. 6, 1981, Ser. No. 251,268
Int. Cl.[4] H01L *23/28*
U.S. Cl. 174—52 FP **12 Claims**



1. A four-leaded dual in-line housing assembly for a semiconductor device comprising:

a rectangular molded insulation housing having a pair of generally flat, spaced, parallel sides and a pair of generally flat, spaced, parallel ends perpendicular to said sides, and generally flat, parallel top and bottom surfaces:

a flat semiconductor chip disposed in the interior of said insulation housing:

a first pair of first and second leads connected to said chip and extending from within said housing and out of the first of said pair of sides; said first pair of first and second leads having a fixed spacing at their outer ends and being separate and insulated from one another for their full length; the portions of said first pair of first and second leads within said housing lying in a plane parallel to the plane of at least one of said top and bottom surfaces and being symmetrically disposed along the width of said first of said pair of sides, the center of said first lead of said first pair of leads being located at $\frac{1}{4}$ the distance across the width of said first side and the center of said second lead of said first pair of leads being located at $\frac{3}{4}$'s the distance across the width of said first side;

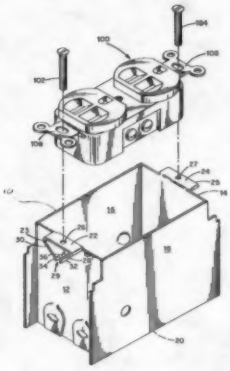
a second pair of first and second leads connected to said chip and extending from within said housing and out of the second of said pair of sides; each of said second pair of leads being disposed in-line with respective ones of said first pair of leads; each of said first and second leads of said second pair of leads being joined together at least in the region interior of said housing at a common enlarged area lead frame; said enlarged area lead frame being disposed in a plane parallel to the plane of said first pair of leads.

4,642,420

FORMED METALLIC WIRING BOX

William Nattel, Montreal, Canada, assignor to Commander Electrical Materials, Inc., Quebec, Canada

Continuation-in-part of Ser. No. 494,832, May 16, 1983, Pat. No. 4,529,834. This application Jul. 9, 1985, Ser. No. 753,226
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.
Int. Cl.[4] H02G *3/08*
U.S. Cl. 174—53 **3 Claims**



1. A resilient, sheet metal, electrical wiring box comprising:

an integral metal wall structure having four side walls and a bottom wall, each side wall having side edges, and first and second end edges; the side walls joined together along their side edges, and the bottom wall joined to the side walls along the first end edges to form a chamber to receive a wiring device; two opposed side walls each having a wiring device attachment means integral therewith for receiving the threaded mounting member of a wiring device to be mounted in said box chamber; said wiring device attachment means comprising:

a rectangular base plate fixed along one long side to the second edge of the side wall and extending at right angles to the side wall, said base plate having a first centrally located, mounting member receiving aperture slightly larger than the outside diameter of the mounting member of the wiring device but smaller than the head of the mounting member;

first and second, generally rectangular, resiliently flexible, leg plates, the first leg plate joined at one narrow end to a first short side of the base plate, the second leg plate joined at one narrow end to the second short side of the base plate, the first and second leg plates extending down the outside of the sidewall to have their other narrow ends located adjacent each other and spaced below the first aperture in the base plate;

the first and second leg plates terminating in first and second opposed foot portions, said foot portions forming a second aperture through which said wiring device mounting member can be inserted, said foot portions provided with thread engaging means for contacting said mounting member, said thread engaging means comprising at least three threads formed on each foot portion;

said opposed leg plates adapted to flex apart to permit the facile insertion of the threaded mounting member between the opposed foot portions without turning, and adapted to urge the opposed foot portions toward one another to have the thread engaging means engage the mounting member, wherein the foot portions wedge themselves tightly against the mounting member when the mounting member is turned to have the leg plates contact the base plate.

4,642,421

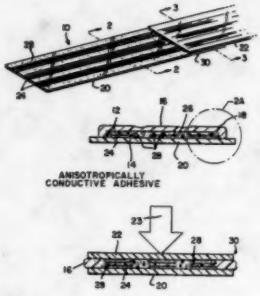
ADHESIVE ELECTRICAL INTERCONNECTING MEANS

Ronald A. Dery, and Warren C. Jones, both of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 657,717, Oct. 4, 1984. This application Aug. 27, 1985, Ser. No. 770,025

Int. Cl.[4] H01B *7/08;* **H01R** *3/00, 43/00;* **H02G** *15/08*

U.S. Cl. 174—88 R **18 Claims**



1. An electrical substrate comprising:

an insulating member having at least one conductive path means on at least one surface thereof,

a dielectric adhesive means covering said insulating member and said conductive path means, said dielectric adhesive means having conductive particles of random size randomly dispersed throughout in noncontiguous conductive units, said units being spaced apart so that no electrical connection takes place on the surface of the insulating member,

an insulating layer secured onto the insulating member and said dielectric adhesive means, said insulating layer being selected from the group consisting of thermoplastic adhesives and pressure sensitive adhesives.

9. An adhesive electrical interconnecting means comprising:

a first insulating member having at least one first conductive path means on one surface thereof;

a first adhesive layer covering said at least one conductive path means and adjoining surface of said first insulating member, said first adhesive layer being an anisotropically conductive adhesive comprised of a nonhomogenous mixture of conductive particles in a nonconductive adhesive binder, the conductive particles, not requiring a specific shape, being dispersed randomly throughout the mixture in noncontiguous conductive units, each unit being comprised of one or more individual particles, the units being sufficiently spaced apart to preclude electrical conductivity between adjacent first conductive path means on the same substrate;

an insulating adhesive layer secured onto said first adhesive layer;

a second insulating member having at least one second conductive path means thereon;

said at least one first conductive path means being positioned in conducting relationship to said at least one second conductive path means, such that the adhesive layers are disposed between said first and second insulating members, and said first and second conductive path means; and

said conductive units on said at least one first conductive path means extending through said insulating adhesive layer and making electrical connection with said at least one first conductive path means and with said at least one second conductive path means.

17. An interconnecting means made in accordance with the method comprised of the steps of:

selecting a first insulating member having at least one conductive path means on at least one surface thereof;

applying a dielectric adhesive means covering said first insulating member and said conductive path means, said dielectric adhesive means having conductive particles of random size randomly dispersed throughout, said particles being spaced apart so that no electrical connection takes place on the surface of said insulating member;

applying an insulating thermoplastic adhesive layer secured onto said first insulating member covering said dielectric adhesive means;

positioning said at least one conductive path means in a conducting relationship with at least one conductive means on a second insulating member such that said thermoplastic adhesive layer is disposed between said at least one conductive path means and said at least one conductive means;

applying heat and pressure to the positioned at least one conductive path means and at least one conductive means causing said insulating thermoplastic adhesive layer to soften, flow and become thinner thus causing said large conductive particles on said at least one conductive path to extend through said insulating layer and make electrical connection with said at least one conductive means and with said at least one conductive path means.

4,642,422

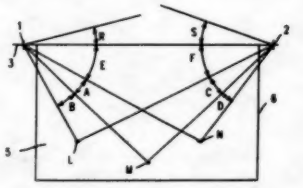
CALIBRATION OF A SCANNING LIGHT INTERRUPT TYPE OF DATA INPUT INTERFACE

Richard L. Garwin, Scarsdale, and James L. Levine, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1985, Ser. No. 809,639

Int. Cl.[4] G08C *21/00*

U.S. Cl. 178—18 **9 Claims**



1. The process of coordinating electrical signal timing and mechanical sweep movement in a device wherein the position of an object in an area is determined by the interruption of a scanning light comprising in combination the steps of:

determining the magnitude of the index angular difference between the position of the mechanical sweep movement when the electrical signal indicating the beginning of a mechanical scanning sweep movement occurs and a base line through the scanning axis, and

correcting by at least one of addition or subtraction said index angular difference from the indicated angle at each scanning light interruption event.

4,642,423

TOUCH CONTROL SYSTEM FOR USE WITH OR HAVING A THREE-DIMENSIONALLY CURVED TOUCH SURFACE

Robert Adler, Northfield, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 30, 1985, Ser. No. 771,324

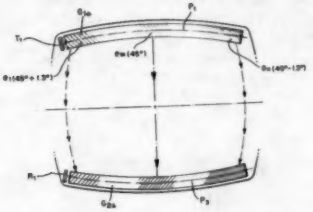
Int. Cl.[4] G08C *21/00*

U.S. Cl. 178—18 **17 Claims**

1. In a touch control system for a cathode ray tube, display panel or other touch-controlled device which is capable of recognizing touch positions along a predetermined coordinate axis on a three dimensionally curved touch surface, the apparatus comprising:

a substrate comprising a sector of a three dimensionally curved surface having a touch surface capable of propagating surface acoustic waves such that a touch on said surface causes a perturbation of a surface wave propagating through the region of the touch;

input surface wave transducer means mechanically and acoustically coupled to said touch surface of said substrate and useful when excited for launching a burst of surface



acoustic waves on said touch surface along a first path which represents a great circle on said surface; and

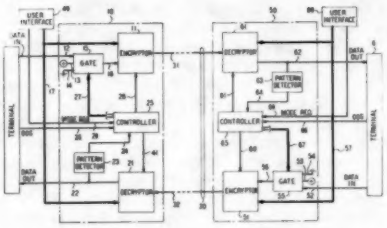
means including an array of surface wave reflective elements disposed in or on said touch surface of said substrate along said first path for directing wave components derived from said burst across said touch surface of said substrate in a progression of transverse paths intersecting said coordinate axis.

4,642,424

CRYPTOGRAPHIC TRANSMISSION SYSTEM

Bruce E. McNair, Holmdel, N.J., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed Jan. 3, 1984, Ser. No. 567,815
Int. Cl.[4] H04L *9/00*
U.S. Cl. 380—48 **37 Claims**



10. Apparatus for use in a cryptographic communication system, said system including

first transmission means for encrypting data applied to its and for transmitting the resulting encrypted data to an associated first reception means, the latter including means for receiving the encrypted data transmitted by said first transmission means and for decrypting that received encrypted data, and

second transmission means co-located with said first reception means for encrypting data applied to it and for transmitting the resulting encrypted data to an associated second reception means, the latter being co-located with said first transmission means and including means for receiving the encrypted data transmitted by said second transmission means and means for decrypting that received encrypted data,

each of said transmission means being operable in a respective cryptographic non-self-synchronizing encryption mode and in a respective cryptographic self-synchronizing encryption mode and each of said reception means being operable in a cryptographic non-self-synchronizing decryption mode corresponding to the cryptographic non-self-synchronizing encryption mode of the associated transmission means and in a cryptographic self-synchronizing decryption mode corresponding to the cryptographic self-synchronizing encryption mode of the associated transmission means,

said apparatus comprising

means co-located with each of said reception means for receiving an indication that there is a lack of cryptographic synchronization between that reception mean and the associated transmission means, and

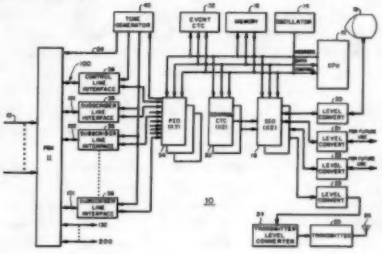
means operative when said each reception means and the co-located transmission means are operating in their respective cryptographic non-self-synchronizing modes for switching the operation of that reception means and the co-located transmission means to their respective cryptographic self-synchronizing modes in response to said indication, whereby a loss of cryptographic synchronization between either said first transmission means and said first reception means or between said second transmission means and said second reception means causes both of said transmission means and both of said reception means to switch to their respective cryptographic self-synchronizing modes.

4,642,425

TELEPHONE PAGING SYSTEM AND METHOD

William H. Guinn, Jr., Lilburn; Richard M. Corbett, Atlanta; Robert S. Bundy, Shellville; Jeffrey M. Seaman, Lilburn; Keith B. Duncan, and Charles M. Link, II, both of Lawrenceville, all of Ga., assignors to BBL Industries, Inc., Atlanta, Ga.

Filed May 7, 1984, Ser. No. 608,048
Int. Cl.[4] H01Q *7/00*
U.S. Cl. 379—57 **41 Claims**



1. In a telephone system including branching means for switching signals on an incoming telephone line between a plurality of extension telephone lines and a plurality of means for receiving paging code signals, each receiving means being responsive to a particular paging code signal, the improvement comprising:

means for selecting a plurality of extension telephone lines;

means for detecting signals directed to selected extension lines representing a call;

means for storing a plurality of signals representing different paging codes, wherein each paging code signal distinctively corresponds to one of the selected extension lines and a receiving means;

means for identifying the paging code signal corresponding to the selected extension line for which the detecting means detected a call signal; and

means for transmitting the identified paging code signal to a plurality of the receiving means.

4,642,426

APPARATUS FOR LOCATING FAULTS IN A CARRIER SUBSCRIBER COMMUNICATION SYSTEM

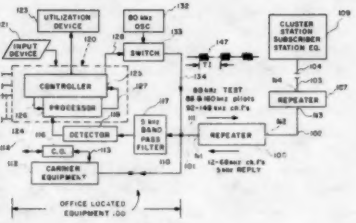
Tom L. Blackburn, San Jose, Calif., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Dec. 10, 1984, Ser. No. 680,205

The portion of the term of this patent subsequent to Dec. 30, 2003, has been disclaimed.

Int. Cl.[4] H04B *1/60, 3/46*

U.S. Cl. 370—13.1 20 Claims



1. Apparatus for checking for faults in a carrier subscriber communication system having office equipment which is connected in series with pluralities of series connected cables and repeaters and subscriber station terminal equipment, each of which repeaters is connected to one adjacent one of said cables at a first node and to an other adjacent one of said cables at a second node, comprising:

means collocated with said office equipment for transmitting a selected number of test pulses having a first frequency f1 on a first cable to the first node at a first repeater that is closest to said office equipment, said first frequency being outside first and second bandwidths of frequencies that are passed by said repeaters between said office location and subscriber station equipment and vice versa;

means in said first repeater for determining a first number of test pulses that are received at said first node thereof;

first means in said first repeater for incrementing said first number of received test pulses by a first prescribed number to produce a second number of test pulses;

first means in said first repeater for coupling a first predetermined number of reply pulses having a second frequency f2 to said first node of said first repeater for transmission on said first cable toward said office equipment if the second number of test pulses equals a second prescribed number for testing the integrity of said first cable between said first repeater and the office equipment location said second frequency f2 being within said second bandwidth of frequencies that are passed by said repeaters between subscriber station equipment and office equipment;

means at the location of the said office equipment for receiving any reply pulses transmitted over said first cable to said office location for indicating the status of the first cable under test;

second means in said first repeater for incrementing the second number of test pulses by a third prescribed number to produce a third number of test pulses if the second number of test pulses is not equal to the second prescribed number;

means in said first repeater for performing a predetermined test in said first repeater if the third number of test pulses is equal to a fourth prescribed number, which number may be equal to said second prescribed number; and

second means in said first repeater for coupling a second predetermined number of reply pulses, which may be equal to said first predetermined number, to one of said first and second nodes of said first repeater for transmission over said first cable to said receiver means for indicating the results of said predetermined test;

said receiving means being operative for determining the number of reply pulses which are received thereby over said first cable for indicating the location of a fault, if any, in said first repeater and/or first cable.

4,642,427

CONTACT ARRANGEMENT

Christer Kratz; Ake Engström, and Göran Karlsson, all of Nynäshamn, Sweden

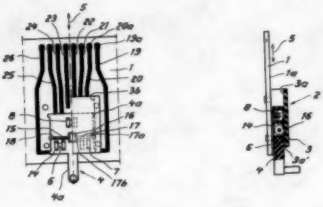
PCT No. PCT/SE84/00330, § 371 Date Jul. 16, 1985, § 102(e) Date Jul. 16, 1985, PCT Pub. No. WO85/02299, PCT Pub. Date May 23, 1985

PCT Filed Oct. 8, 1984, Ser. No. 757,838

Claims priority, application Sweden, Nov. 16, 1983, 8306311

Int. Cl.[4] H01H *15/06, 1/16*

U.S. Cl. 200—16 C 3 Claims



1. A switch for making electrical contacts between electrical circuit strips on a circuit boarding comprising:

electrically conductive strips arranged in a predetermined pattern on said circuit board, portions of said strips extending in pairs in parallel in a first direction within a switching area for providing fixed switching contacts of said switch;

an essentially U-shaped housing attached to said circuit board comprising wall portions and a cover portion extending above said switching area and offset a predetermined distance above said circuit board for defining a space essentially rectangular in cross-section and being opened in said first direction;

a slide member dimensioned to fit inside said housing between the housing and the circuit board for movement in said first direction;

said slide member containing a plurality of contact members, each of said contact members comprising a first and a second contact rolelr integrally interconected by a shaft portion for forming said contact member;

each of said contact members being supported by said slide member via said shaft portion for being pivotable during the movement of the slide member in said first direction and each of said contact rollers being positioned immediately above and containing a corresponding circuit strip, each contact member forming an electric circuit from a first circuit strip to the first contact roller, thence through said shaft portion to the integrally connected second contact roller and finally to a second circuit strip;

said contact members being arranged in at least two rows offset in said first direction for supporting said slide member by the contact of said contact members and said circuit board;

said slide member including a biasing means for biasing said slide member towards said circuit board and each contact member into contact with the corresponding circuit strip, said biasing member being positioned between said rows of contact members;

said slide member being movable in said first direction for causing said contact members to pivot and roll over said circuit strips for opening and closing electric circuits in dependence of the pattern of said circuit strips;

each shaft portion being perpendicular to said first direction

and constituting first guiding means for guiding said slide member in said first direction during the movement of said slider and preventing deviations from said first direction;

said wall portion of said housing forming second guiding means for preventing lateral deviations of the slide member from said first direction.

4,642,428

CIRCUIT INTERRUPTER

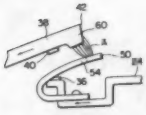
Hajimu Yoshiyasu; Mitsugu Takahashi, both of Itami; Fumiyuki Hisatsune, and Shiro Murata, both of Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1985, Ser. No. 732,071

Claims priority, application Japan, Aug. 15, 1984, 59-169391; Aug. 15, 1984, 59-169392; Aug. 15, 1984, 59-169395; Aug. 15, 1984, 59-169398; Aug. 15, 1984, 59-169399; Aug. 15, 1984, 59-169403; Aug. 15, 1984, 59-169404; Aug. 15, 1984, 59-169405

Int. Cl.⁴ H01H *33/20*

U.S. Cl. 200—144 R **21 Claims**



1. A circuit interrupter comprising in a housing:

a stationary contact;

a stationary conductor carrying said stationary contact;

a movable contact;

a movable contact arm carring said movable contact;

an operating mechanism for moving said movable contact arm between contact-closed and contact-open positions in response to an overcurrent flowing through said circuit interrupter, said stationary and movable contacts defining therein an arcing region in which an electric arc is established when said contacts are tripped open;

an arc extinguisher including a plurality of arc extinguisher plates disposed in a facing relationship with said arcing region for cooling and extinguishing the electric arc;

an arc horn on said movable contact arm and providing a surface to which one of the legs of the electric arc is transferred from said contact when said movable contact is moved toward the open position after being tripped open;

an arc runner mounted on said stationary conductor and providing a surface to which the other of the legs of the electric arc is transferred from said stationary contact when said movable contact is moved toward the open position after being tripped open;

said arc runner having formed therein an arc runner slot which opens to substantially surround said arcing region;

said arc runner and said stationary contact being positioned such that at least one of said movable contact and said arc horn of said movable contact arm is located within said arc runner slot of said arc runner when said contacts are in a closed position.

4,642,429

SWITCH

Teijiro Mori, Nishinomiya; Yuichi Wada, Kawanishi; Yuji Sako, Kasugai; Hiroaki Tazawa, Nagoya, and Hiroyuki Okado, Owariasahi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

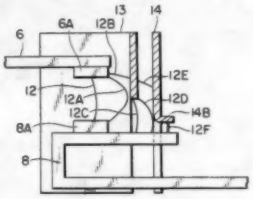
PCT No. PCT/JP83/00397, § 371 Date Jul. 2, 1984, § 102(e) Date Jul. 2, 1984, PCT Pub. No. WO84/02033, PCT Pub. Date May 24, 1984

PCT Filed Nov. 4, 1983, Ser. No. 629,833

Claims priority, application Japan, Nov. 10, 1982, 57-197058; Nov. 10, 1982, 57-197061; Dec. 3, 1982, 57-212272; Dec. 3, 1982, 57-212275; Dec. 3, 1982, 57-212276; Dec. 3, 1982, 57-212277; Dec. 3, 1982, 57-212281; Dec. 3, 1982, 57-212282; Dec. 24, 1982, 57-229545

Int. Cl.⁴ H01H *33/08*

U.S. Cl. 200—144 R **12 Claims**



1. A switch comprising: a housing; a stationary contact stationarily disposed within the housing and having a distal end; a stationary contact element joined to the stationary contact at a location spaced from the distal end thereof; a movable contact mounted to undergo movement in the housing toward and away from the stationary contact; a movable contact element joined to the movable contact for movement therewith and being disposed in opposed facing relation to the stationary contact element; a first metallic arc extinguishing member disposed in the housing and having first and second spaced-apart sidewall portions disposed on opposite sides of the stationary and movable contacts in the region of the stationary and movable contact elements, and a third sidewall portion interconnecting the first and second sidewall portions at a location between the stationary contact element and the distal end of the stationary contact, the third sidewall portion having a gap therein through which extends the distal end portion of the stationary contact; a second metallic arc extinguishing member disposed in the housing and having a sidewall portion spaced from the third sidewall portion of the first metallic arc extinguishing member in the direction of the stationary contact distal end, the sidewall portion of the second metallic arc extinguishing member having a gap therein through which extends the distal end portion of the stationary contact; and wherein the gap spacing between the second metallic arc extinguishing member and the stationary contact is smaller than the gap spacing between the first metallic arc extinguishing member and the stationary contact.

4,642,430

MOLDED CASE CIRCUIT BREAKER WITH AN IMPROVED CONTOURED CRADLE

Robert J. Tedesco, Coraopolis, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 18, 1985, Ser. No. 756,484

Int. Cl.⁴ H01H *3/46*

U.S. Cl. 200—153 G **11 Claims**

1. An electrical circuit breaker comprising;

a first electrical contact,

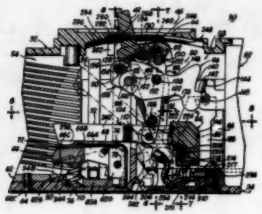
a second electrical contact, and

operating means for moving said first and second electrical contacts into and out of engagement, said operating means

having an OPEN position, a CLOSED position and a TRIPPED position,

said operating means including an over-center toggle mechanism and a manually engageable handle for moving said operating means from said TRIPPED position to and beyond said OPEN position and then to said CLOSED position after the circuit breaker has been tripped and thereby resetting the operating means,

said over-center toggle mechanism comprising (a) a rigid, one-piece pivotable cradle having an elongated, arcuate



cam surface formed along a portion thereof, and (b) a cradle cam pin movable by said handle and disposed for physically engaging the arcuate cam surface of said cradle during a reset operation,

the curvature of said cradle cam surface being physically configured to change the mechanical advantage of said handle during the reset operation in such a manner that a substantially constant reset force is applied to said cradle cam surface through said handle and said cradle cam pin to reset said operating means.

4,642,431

MOLDED CASE CIRCUIT BREAKER WITH A MOVABLE ELECTRICAL CONTACT POSITIONED BY A CAMMING SPRING LOADED CLIP

Robert J. Tedesco, Coraopolis, and David L. Haggerty, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 18, 1985, Ser. No. 756,487
Int. Cl.[4] H01H *3/46*
U.S. Cl. 200—153 G **16 Claims**

1. An electrical circuit breaker comprising;

a first electrical contact disposed on a movable elongated contact arm having an end portion with a cam surface,

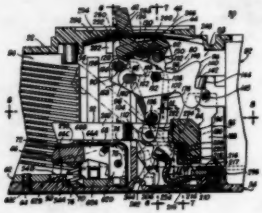
a second electrical contact, and

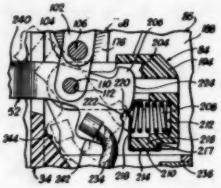
operating means for moving said first electrical contact and contact arm into a CLOSED position and an OPEN position relative to said second electrical contact,

said operating means comprising a rotatable cross-bar having a recess for receiving the end portion of said contact arm,

said operating means further comprising spring means for releasably biasing the end portion of said contact arm into driving engagement with said cross-bar for enabling rotational movement of said first electrical contact and contact arm in unison with the rotational movement of said cross-bar during a normal trip operation of the circuit breaker and for enabling rotational movement of said first electrical contact and contact arm substantially independently of the rotational movement of said cross-bar upon the occurrence of a fault current condition,

said spring means comprising a compression spring and a spring clip secured to said cross-bar with said spring clip disposed between said compression spring and the end portion of said contact arm, said spring clip having an outwardly projecting cam surface for engaging the cam surface of said contact arm end portion and transferring





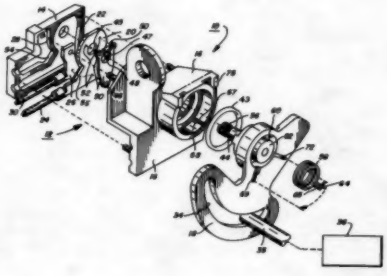
spring force from said compression spring to said contact arm end portion.

4,642,432

SWITCH MECHANISM WITH COMBINATION SPRING AND ASSEMBLY RETAINER

Thomas F. Ring, Shelby, N.C., assignor to Fasco Controls Corporation, Shesiby, N.C.

Filed Dec. 19, 1985, Ser. No. 810,582
Int. Cl.[4] H01H *21/38*
U.S. Cl. 200—155 R **9 Claims**



1. A switching mechanism for providing an electrical connection between two conductors associated therewith comprising

a body member having a first contact element mounted thereon and connected to one of the conductors, and a second contact element mounted thereon spaced from said first contact element and being connected to the other conductor,

an actuator member rotatably mounted on said body member and having a switching element connected thereto and rotatably movable therewith, said actuator member being movable to a first position wherein said movable switching element is out of electrical contact with said contact elements and to a second position wherein said movable

switching element is in electrical contact with said contact elements, and

a spring member associated with said actuator and arranged to resiliently bias the same to one of said positions, said body member and said actuator each having means for holding a portion of said spring member, respectively, for retaining said actuator on said body member.

4,642,433

PUSHBUTTON SWITCH WITH AURAL CONFIRMATION OF OPERATION

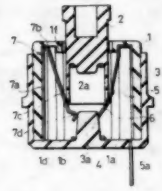
Taneo Murata, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jul. 11, 1985, Ser. No. 754,337

Claims priority, application Japan, Jul. 11, 1984, 59-104986[U]; Jul. 16, 1984, 59-107372[U]

Int. Cl.⁴ H01H *5/18, 9/16, 13/36*

U.S. Cl. 200—308 **2 Claims**



1. A pushbutton switch comprising:

a casing having an opening in an upper wall and side walls;

a pushbutton member having one part extending from said casing and a stem disposed through said opening into said casing, said member being depressable such that an end of said stem is moved downward in the casing from an initial position to an operative position;

biasing means engaging said pushbutton member for biasing said pushbutton member and stem toward said initial position;

a switch element disposed in the casing and having a contact member engaged with the end of said stem such that said switch element is in one state when said stem is in said initial position and another state when said stem is in said operative position; and

a leaf spring disposed in the casing adjacent one side wall of said casing, said spring including a fixed portion which is fixedly mounted relative to said one side wall, an upright portion extending therefrom displaceable by a bending action of said spring away from said one side wall and releasable back toward said one side wall so as to strike against it and cause a clicking sound, a bent portion bent downward from said upright portion at an angle, a spring portion extending downward at said angle from said bent portion and provided with a protruding portion on its end,

wherein as said stem is moved downward from said initial position, said end of said stem rides downwardly on said spring portion so as to bend said leaf spring and displace said upright portion thereof away from said one side wall, and as said stem reaches said operative position and said switch element is switched from one state to the other, said end of said stem engages said protruding portion, thereby providing an operator of said pushbutton switch a tactile feel of operation, and then rides over said protruding portion so as to release said end of said spring portion and cause said upright portion to move back and strike against said one side wall, thereby providing the operator a clicking sound for aural confirmation of operation.

4,642,434

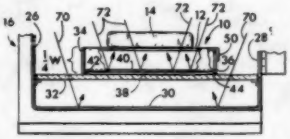
MICROWAVE REFLECTIVE ENERGY CONCENTRATING SPACER

David H. Cox, Robbinsdale; David W. Andreas, Minneapolis, and James D. Watkins, Prior Lake, all of Minn., assignors to Golden Valley Microwave Foods Inc., Eden Prairie, Minn.

Filed Nov. 14, 1985, Ser. No. 797,926

Int. Cl.⁴ H05B *6/64*

U.S. Cl. 219—10.55 E **4 Claims**



1. A foldable and collapsible microwave reflective energy concentrating spacer that can be shipped in a food package for facilitating the heating of food in a microwave oven having a microwave transparent supporting shelf located an indeterminate distance above a microwave reflective oven floor comprising,

a spacer body defining an upper support surface for supporting a food article thereon and a lower microwave reflective surface spaced below the supporting surface by a distance of about ¼ wave length of the microwave energy supplied by the oven, whereby when said microwave energy has a wavelength of 12 cm said distance is about 2.5 to 3 cm,

said microwave reflective surface comprising microwave reflective sheet material extending the width and breadth of the spacer body and being substantially aligned with the support surface,

a portion of the spacer body between the support surface and the reflective surface being composed of microwave transparent material,

whereby microwave energy from the oven striking the reflective surface of the spacer body from above is reflected upwardly therefrom such that the reflective surface acts as an artificial oven floor forming a region of concentrated phase-reinforced microwave energy inside the food or at the surface of the food article resting upon said upper support surface to thereby enhance heating of the food by providing a uniformly high level of heating without regard to the distance between the supporting shelf of the oven and the oven floor,

and said spacer body is formed from a plurality of panels of microwave transparent sheet material connected by hinges at intersecting edges which are parallel to one another to define a spacer that is adapted to be folded flat for compact storage and shipment in said package by folding the spacer body at the parallel hinges to a flattened condition, one of the panels comprising a horizontal bottom wall panel including a metal foil defining said microwave reflective surface and movable members operationally associated with the panels to hold the spacer body in an upright condition during use to support the weight of the food resting on the upper support surface.

4,642,435

ROTATING SLOT ANTENNA ARRANGEMENT FOR MICROWAVE OVEN

Louis H. Fitzmayer; James E. Staats, and Matthew S. Miller, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 26, 1985, Ser. No. 813,638

Int. Cl.⁴ H05B *6/72*

U.S. Cl. 219—10.55 F **11 Claims**

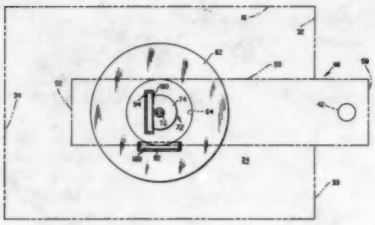
1. A microwave oven comprising:

a cooking cavity defined by electrically conductive walls;

a rectangular feed waveguide extending along the outer surface of one of said cooking cavity walls, one wall of said waveguide being common with at least a portion of said one wall of said cooking cavity, said common wall having formed therein a circular opening laterally centrally positioned relative to said cavity;

a microwave energy generator coupled to said waveguide to establish a microwave energy propagating mode therein; said waveguide including a short circuit termination remote from said generator beyond the circular opening;

a circular metallic radiating disk antenna mounted in said cavity for rotation in a plane parallel to said common wall having an axis of rotation coaxially aligned with the circular opening, said disk antenna being configured to radiate energy peripherally from the outermost edge of said disk antenna;



means for rotating said disk antenna;

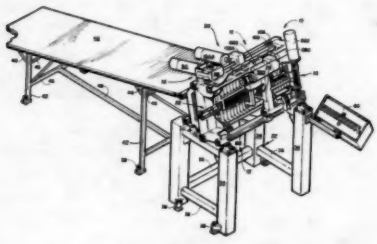
said disk having formed therein two elongated radiating slots, a first one of said slots being oriented substantially perpendicular to a first radial line extending from said axis of rotation of said disk antenna and a second one of said slots being oriented substantially perpendicular to a second radial line extending from said axis of rotation at an angle of 90° relative to said first radial line, said first slot being radially positioned outwardly of said second slot at a distance selected for relatively strong coupling to energy propagating in said waveguide and said second slot being positioned for relatively moderate coupling to the waveguide energy; each of said slots being louvered for improved coupling of microwave energy to the load being heated in said cavity.

4,642,436

AUTOMATIC METALLIC HONEYCOMB CORE MANUFACTURING MACHINE

William F. Rethwish, Bonita, and Samuel Schneider, San Diego, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Sep. 14, 1984, Ser. No. 650,627
Int. Cl.[4] B23K *11/00, 37/02*
U.S. Cl. 219—78.11 **13 Claims**



1. A machine for fabricating a continuous length of honeycomb core of discrete height and width from a continuous strip of pre-formed foil comprising:

a mainframe assembly;

first weld electrodes positioned along said mainframe assembly;

a transport assembly carried by said mainframe assembly and translatable relative to said mainframe assembly along said first weld electrode;

second weld electrodes carried by said transport assembly said second wall electrodes always addressing a portion of said first weld electrodes; and

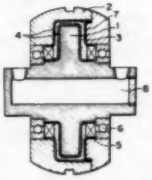
a foil positioning means carried by said transport assembly for laying a layer of a pre-formed foil between said first weld electrodes prior to said second weld electrodes contacting any portion of said addressed first weld electrodes whereby when two layers of said preformed foil are positioned adjacent to said first weld electrodes said two layers are welded together at discrete locations by current passing between said first and second weld electrodes through said layers.

4,642,437

ELECTRODE ROLL FOR ELECTRIC RESISTANCE WELDING

Masatoshi Yamamoto; Yasushi Kawai; Katsuyoshi Shudo; Hiroyuki Kato, all of Sagamihara, and Shunsuke Masuda, Kamakura, all of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan

Filed Dec. 20, 1985, Ser. No. 811,755
Claims priority, application Japan, Dec. 26, 1984, 59-278822
Int. Cl.[4] B23K *11/06*
U.S. Cl. 219—84 **3 Claims**



1. An electrode roll for electric resistance welding comprising a stator member at least partly made of copper or a copper alloy, a rotor member at least partly made of copper or a copper alloy and rotatably mounted on said stator member, and a fusible alloy mainly composed of gallium and filling as a conductive medium an annular gap defined between said stator and rotor members, wherein portions of said stator and rotor members facing said annular gap and being made of copper or a copper alloy are covered by an alloy layer containing cobalt and tungsten in weight proportions of 90:10 to 30:70.

4,642,438

WORKPIECE MOUNTING AND CLAMPING SYSTEM HAVING SUBMICRON POSITIONING REPEATABILITY

Karl W. Beumer; Charles A. Gaston; Charles H. Locke; Alfred Mack, all of Poughkeepsie; Brian C. O'Neill, Millbrook, all of N.Y.; Warren J. Pinckney, New Fairfield, Conn., and Alan D. Wilson, Armonk, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1984, Ser. No. 672,724
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 L **37 Claims**

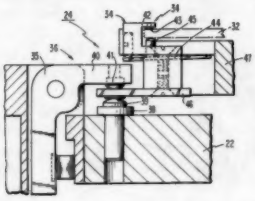
1. A workpiece positioning system for substantially avoiding mechanical hysteresis and providing accurate and precisely repeatable movement of a workpiece with respect to an associated apparatus which operates on the workpiece, comprising:

a movable positioning table;

a workpiece supporting superstructure;

coupling means for mounting said workpiece to said workpiece supporting superstructure; and

a combination of at least three passive elastic kinematic support means for joining said workpiece supporting superstructure to said movable positioning table, each of said support means being selectively in at least one direction which is desired to be fixed and compliant in all



uncontrolled directions; containing different degrees of freedom of movement of said superstructure such that all six degrees of freedom are fixed without redundantly fixing any degree of freedom, so that said superstructure is not over-constrained;

whereby mechanical hysteresis of said workpiece with respect to said associated apparatus which operates on said workpiece is substantially avoided.

4,642,439

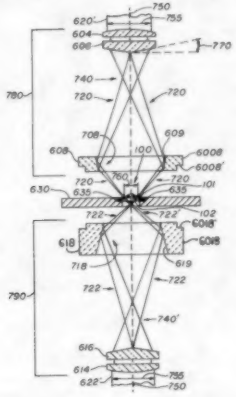
METHOD AND APPARATUS FOR EDGE CONTOURING LENSES

Richard T. Miller; Yefim P. Sukhman, both of Phoenix, and Lynn C. Welker, Scottsdale, all of Ariz., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 3, 1985, Ser. No. 688,491

Int. Cl.[4] B23K *26/00*

U.S. Cl. 219—121 LN **16 Claims**



1. A method of fully contouring the peripheral edge of a lens comprising the steps of:

(A) positioning a workpiece having an anterior and a posterior surface between a first and a second beam focussing means situated opposite each other wherein each of said beam focussing means is capable of projecting a ring-shaped beam of electromagnetic radiation in the direction of said workpiece surfaces such that one ring-shaped beam from each of said beam focussing means inpinges upon the surface of said workpiece at which the beam is directed in such a position and at such an angle relative to each respective surface that a lens of a preselected diameter having a fully contoured peripheral edge can be obtained, said workpiece being a unitary body comprising a lens made of a synthetic polymeric material having a central optical region surrounded by an annular peripheral region, and thereafter

(B) passing a beam of electromagnetic radiation from at least one electromagnetic radiation source thorugh each of sadi first and second beam focussing means for a sufficient period of time to allow said ring-shaped beams of electromagnetic radiation projected from said beam focussing means to impinge upon and fully edge contour and sever said lens from the workpiece, said beam having an appropriate wavelength for the material from which the lens is made and having a sufficient level of energy to accomplish said contouring and severing after passing through said beam focussing means.

4,642,440

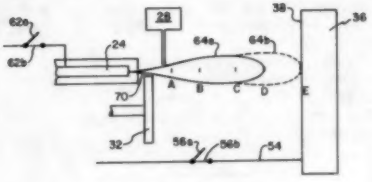
SEMI-TRANSFERRED ARC IN A LIQUID STABILIZED PLASMA GENERATOR AND METHOD FOR UTILIZING THE SAME

Jay F. Schnackel, 47156 Beechcrest Dr., Plymouth, Mich. 48170, and Karel Zverina, Biddle House Apt. 8D, 2502 Biddle Blvd., Wyandotte, Mich. 48192

Filed Nov. 13, 1984, Ser. No. 670,636

Int. Cl.[4] B23K *9/00*

U.S. Cl. 219—121 PP **7 Claims**



1. A method of applying a coating to an electrically conductive substrate comprising:

generating a plasma stream by forming an arc between a cathode and an anode and bringing a liquid into contact with the arc,

directing the plasma stream toward the substrate,

introducing a coating material into the plasma stream to melt and spray the coating material on the substrate,

while the plasma stream is being generated and while coating material is being introduced into the plasma stream, selectively varying the length of the plasma stream in which ions and free electrons are present by selectively varying the voltage of the substrate relative to the voltage of the anode to thereby vary the application of the coating to the substrate.

4,642,441

PORTABLE FAN FOR WINTER AND SUMMER USE

Eric Kenyon, Ringwood, Australia, assignor to Allware Agencies Limited, London, England

Filed Aug. 16, 1982, Ser. No. 408,163

Claims priority, application Australia, Aug. 17, 1981, PF0274

Int. Cl.[4] F24H *3/04, 9/20*; F24F *13/08*; F01D *7/00*

U.S. Cl. 219—364 **14 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 40 Pages)

6. A multi-purpose fan comprising a portable housing containing the following components:

an electrically driven fan blade assembly, at least one heating

coil positioned in the air current of said fan blade assembly,

a heating-cooling mode selector,

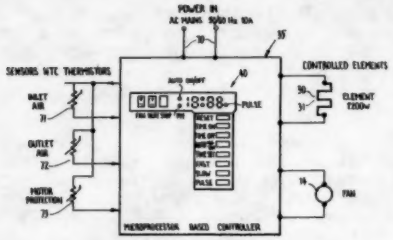
temperature sensing means to sense the temperature of air entering the fan,

speed control means to vary the speed of the fan blade assembly;

power control means to vary the power output of the heating coil, and

a micro-processor circuit including a solid state timing device, selected temperature control means, and operating time selection means, said micro-processor circuit being operatively associated with said mode selector, said temperature sensing means, said speed control means and said power control means and operating said speed control means and said power control means and causing the fan to operate either as a heater or as a cooling fan, in accordance with selected parameters, operating the fan at high speed in the cooling mode and in the heating mode operating the fan at a speed normally low relative to the high speed in the cooling mode, and

the micro-processor circuit providing pulse means to cause the fan blade assembly to operate in the heating mode intermittently for brief periods at high speed relative to normal low speed in the heating mode to substantially increase the air circulation intermittently.

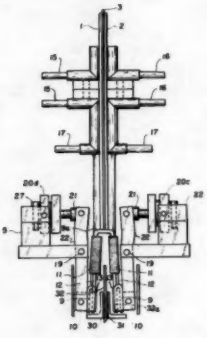


4,642,442

BATTERY INTERCELL CONNECTION BY INDUCTION HEATING

William E. Mullane, Warren, Ohio, and David Lund, S. Minneapolis, Minn., assignors to The Taylor-Winfield Corporation, Warren, Ohio

Filed Oct. 17, 1985, Ser. No. 788,642
Int. Cl.[4] H05B *6/10*
U.S. Cl. 219—10.41 **19 Claims**



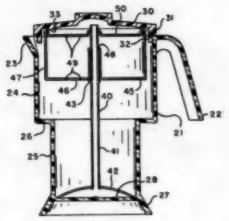
1. In a storage battery having a plurality of pairs of terminals of readily fusible material, each pair of terminals having integral vertical riser portions having opposing flat surfaces, said riser portions sandwiching an electrical insulating vertical partition having a horizontal hole therethrough, each terminal also having a horizontal strap portion extending away from said partition and integral vertical riser portions; the method of making an intercell connection between each pair of terminals through the horizontal hole of the corresponding vertical partition, comprising applying a vertical insulating sheet against the outside of each of said vertical riser portions and applying an electrical induction coil adjacent the outside each of said sheets substantially concentric with said horizontal hole, squeezing together said sheets, pair of terminals and partition, and applying high frequency electrical current to said coils sufficiently as to partially fuse said riser portions in the vicinity of said horizontal hole of said partition and to fill said horizontal hole with fused metal of said riser portions, using said sheets, partition and vertical riser portions as dams to contain the fused metal, and thereafter allowing said fused metal to cool and solidify so as to form a metallic connection between said pair of terminals.

4,642,443

APPARATUS FOR BREWING COFFEE IN MICROWAVE OVENS

Jorgen A. Jorgensen, Bloomington, and Donald W. Nygren, St. Louis Park, both of Minn., assignors to Northland Aluminum Products, Inc., Minneapolis, Minn.

Continuation of Ser. No. 321,889, Nov. 16, 1981, abandoned.
This application May 10, 1984, Ser. No. 608,810
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 E **3 Claims**



1. A percolation-type coffee maker for use in a microwave oven, comprising:

(a) a housing of microwave transparent material, said housing having an open upper end, a closed lower end and having first and second generally cylindrical portions of first and second radii, respectively and concentrically disposed one above the other and joined at a juncture zone defining a shoulder extending substantially parallel to said radii, with the first portion disposed above the second portion, and said first radius being larger than said second radius;

(b) a cover member for closing said open upper end of said housing;

(c) a percolator pump having a circular domed base of a diameter insertable into said second portion of said housing and adapted to rest upon said closed lower end, and a vertical tubular member projecting upwardly from said domed base, the lumen of said tubular member communicating with the volume between the underside of said domed base and the closed lower end; and

(d) a perforated metal basket for containing ground coffee detachably mounted on said tubular member, said basket being cylindrical and having a basket radius intermediate said first and second radii, said percolator pump supporting said basket in said first portion of said housing and beneath said cover, said metal basket substantially shielding said coffee grounds from exposure to microwave energy.

4,642,444

ELECTRICAL MACHINING FLUID AND METHOD UTILIZING THE SAME

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Nov. 1, 1982, Ser. No. 438,285
Claims priority, application Japan, Nov. 2, 1981, 56-176128
The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Int. Cl.[4] B23H *1/08*; H01B *3/22, 3/46*
U.S. Cl. 219—69 D 22 Claims

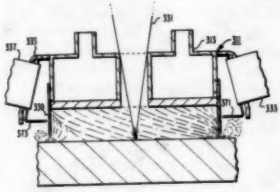
1. An electrical machining fluid consisting of 0.1 to 5% by weight at least one hydrocarbon oil, 0.1 to 5% by weight a silicone oil and the balance substantially water.

4,642,445

SHIELDING APPARATUS FOR METAL PROCESSING OPERATIONS

Israel Stol, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 28, 1985, Ser. No. 750,721
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 FS 20 Claims



1. A shielding apparatus for metal processing operations comprising:

a housing having an enclosed upper region with a central bore therethrough which bore defines a conduct for the application of metal processing thermal excitation onto a selected location of a workpiece;

said housing defining at least a first chamber about said central bore, through which inert gas is introduced to flood an area defined by said first chamber surrounding the selected location of the workpiece for metal processing;

a second exhaust chamber diposed about a perimeter defined by said first chamber and defining a negative pressure region for the removal of smoke or the like resulting from the metal processing operation;

a skirt comprising a flexible material disposed about the perimeter defined by said first chamber, said skirt physically isolating said first chamber in which inert gas is introduced from the second exhaust chamber and depending from the perimeter defined by said first chamber so as to cooperate with the workpiece directly below said housing first chamber to substantially enclose the selected location for metal processing;

a cooling means disposed in said first chamber about said central bore; and

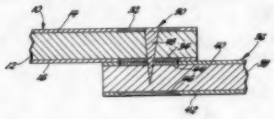
a plasma suppression nozzle disposed proximate said central bore to provide a high velocity off-axis jet of inert gas to forcibly blow away superheated vapors and gas from the selected location.

4,642,446

LASER WELDING OF GALVANIZED STEEL

Edward J. Pennington, Pleasanton, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1985, Ser. No. 783,687
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 LD 2 Claims



1. A method for welding a first steel sheet member having a corrosion protective metallic zinc coating on major faces thereof to a second steel member to form a joint therebetween, said first member comprising a faying surface region and a joint-external surface region opposite said faying surface, said method comprising

pretreating the first member to selectively remove the zinc coating from the faying surface region and the joint-external surface region thereof and applying a nickel-base coating onto said regions,

assembling the members such that the nickel-base coated faying surface region lies adjacent a faying surface region of the second member, said second member faying surface region being substantially free of vaporizable zinc, and

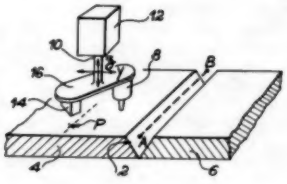
welding the assembly by scanning the nickel-base coated joint external surface region of the first member with a high energy density beam to fuse the members at the faying surface to produce a welded joint therebetween, whereby the nickel-base coating on the first member surface regions reduces weld porosity and enhances corrosion resistance of the joint.

4,642,447

PROCESS FOR THE RESETTING OF THE PATH OF A MEMBER AND APPARATUS FOR PERFORMING THIS PROCESS

Jean-Marie Détriché, Montesson, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed May 8, 1985, Ser. No. 731,973
Claims priority, application France, May 11, 1984, 84 07329
Int. Cl.[4] B23K *9/12*
U.S. Cl. 219—124.34 4 Claims



1. A process for the resetting of the path of a member fixed to a carrier forced to automatically follow a stored line, the object of the process being to reset the member to a real line described with respect to an object and which can diverge

from the stored line, the position of the line to be followed on the object being indicated by a resetting position associated with the object, wherein the process comprises:

displacing the carrier relative to the object to bring it into a stored resetting position, the member being locked to the carrier in a reference position during this displacement,

detecting by means of a position detector fixed to said member an offset between the stored resetting position from the resetting position associated with the object,

unlocking the member to allow a movement of said member relative to the carrier,

translating said member with said detector relative to the carrier and the object in order to cancel out said offset,

relocking the member relative to the carrier in the reset position, and

displacing the carrier relative to the object to bring it to the start of the stored path, the member thus being positioned on the line to be followed whereby the resetting of the member does not affect the stored line followed by the carrier.

4,642,448

ELECTROSTATIC COPYING APPARATUS

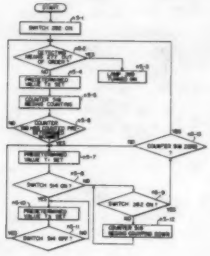
Yutaka Shigemura, Takarazuka; Hiroshi Kimura, Habikino; Masahiko Hisajima, Osaka; Isao Yada, Neyagawa; Shinobu Satonaka, Toyonaka, and Seiji Kaminaga, Hirakata, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 451,184, Dec. 20, 1982, Pat. No. 4,551,009. This application Aug. 5, 1985, Ser. No. 762,738

Claims priority, application Japan, Dec. 21, 1981, 56-207562; Dec. 28, 1981, 56-212707; Dec. 28, 1981, 56-198684[U]; Dec. 29, 1981, 56-210298; Dec. 29, 1981, 56-210299; Jan. 13, 1982, 57-4216; Jan. 18, 1982, 57-6657; Jan. 19, 1982, 57-7090

Int. Cl.[4] G03G *15/20*

U.S. Cl. 219—216 **11 Claims**



1. A heat fixing device having an electrical heating means for heat-fixing a toner image on a sheet member, said heat fixing device comprising temperature detecting means; heating control means for controlling energization and deenergization of the heating means on a basis of temperature detected by said temperature detecting means; said heating control means, before lapse of a first predetermined period of time from application of an electric power, controlling the energization and deenergization of said heating means on a basis of whether the detected temperature is below a second predetermined value higher than a first predetermined value suitable for heat fixation and thus adjusting the detected temperature substantially to the second predetermined value, and after the lapse of said first predetermined period of time from the application of electric power, controlling the energization and deenergization of said heating means on the basis of whether the detected temperature is below said first predetermined value, and thus adjusting said detected temperature substantially to said first predetermined value; an electric power saving means having a manually operable power saving switch for producing a power saving signal according to the operation of the power saving switch, said heating control means controlling the energization and deenergization of said heating means on the basis of whether said detected temperature is below a third predetermined value lower than the first predetermined value when the power saving signal is present, and thus adjusting the detected temperature substantially to said third predetermined value.

4,642,449

CASHBOX FOR A CASH REGISTER

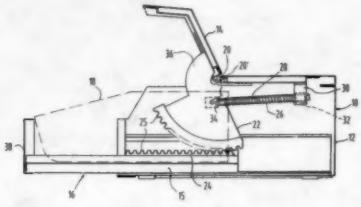
Guenter Baltz, and Wilfried Dobring, both of Berlin, Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,375

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 8409724[U]

Int. Cl.[4] G07G *1/00*

U.S. Cl. 235—22 **18 Claims**



1. A cash register, cashbox assembly comprising:

a cash case having opposite parallel first and second side walls and a top, said top being divided between a rearward portion which is fixed to said side walls and a forward lid portion which is pivotally mounted to said rearward portion for rotation about a transverse axis between closed and opened positions;

a cash drawer having opposite parallel side walls, a bottom, a rear wall and an open top;

means for mounting said drawer within said case for fore-and-aft longitudinal displacement between a position wholly within said cash case and a position partly forwardly extended from said cash case;

first and second longitudinally extending racks mounted on opposite lateral side walls of the drawer;

first and second toothed segments of rigid material pivotally displaceably mounted on said first and second side walls, respectively, of the case and having the teeth thereof in engagement with respective racks whereby fore-and-aft displacement of the drawer is accomplished by rotation of said segments;

each said toothed segment having integrally formed therewith a rigid arm which is mechanically connected to said lid portion such that rotation of said segments opens and closes said lid portion relative to said cash case; and

bias spring means mechanically connected between said cash case and at least one of said toothed segments to bias said segments toward a position in which said lid portion is closed.

4,642,450

PUNCHING STYLUS FOR HANDICAPPED USERS

John E. Ahmann, Napa, Calif., assignor to Election Supplies Limited, Napa, Calif.

Filed May 9, 1986, Ser. No. 861,425

Int. Cl.[4] G07C *13/00*

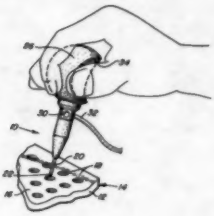
U.S. Cl. 235—50 R **4 Claims**

1. A punch-out stylus for use with a tabulating device having an upper plate with holes adapted to register with scored punch-out area on a tabulation sheet placed under the plate, said stylus comprising:

a generally elongated body section having inner and outer

ends and a transverse hole extended diametrically therethrough adapted for retaining one end of a flexible chain;

a rigid rod member axially aligned with and having one end portion embedded within said inner end of said elongated body section and another end portion extending beyond said elongated body section, with a tip portion adapted for insertion into any selected hole of said upper plate; and



an enlarged body portion attached to said outer end of said elongated body section, said enlarged body section having an indentation along one side adapted to receive the thumb of said user as said enlarged body portion is gripped.

4,642,451

DISTANCE MEASURING DEVICE WITH VARIOUS CONTROLS OF THE LIGHT EMITTING MEANS

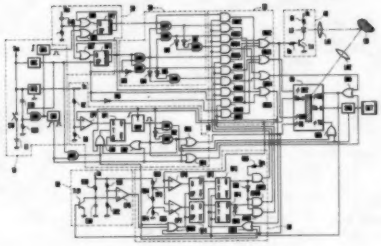
Tokuichi Tsunekawa; Yuichi Sato; Takashi Kawabata, and Susumu Matsumura, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Mar. 30, 1984, Ser. No. 595,283

Claims priority, application Japan, Apr. 1, 1983, 58-57202; Apr. 1, 1983, 58-57203; Apr. 1, 1983, 58-57205; Apr. 1, 1983, 58-57209

Int. Cl.[4] G01J *1/20, 1/32*

U.S. Cl. 250—201 **11 Claims**



1. A light projection quantity control device for a distance measuring device, comprising:

(a) light emitting means to alternately perform a light projecting action on an object and a no light projecting action, repeatedly;

(b) light receiving means for receiving a reflection from said object, said light receiving means having a photo-electric conversion part arranged to produce an electric charge whose amount varies with the quantity of light incident thereon, storing means for storing an amount of electric charge produced by an incident light received during light projection and storing means for storing an amount of electric charge produced by an incident light received between light projections;

(c) detecting means for detecting the stored amount of electric charge of said light receiving means; and

(d) light emission duty ratio converting means for changing the light emission duty ratio of said light emitting means in response to a signal produced by said detecting means.

4,642,452

SEMIACTIVE NIGHT VIEWING SYSTEM

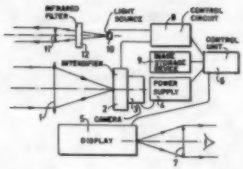
Fernand R. Loy, Sceaux, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 30, 1985, Ser. No. 781,367

Claims priority, application France, Oct. 5, 1984, 84 15309

Int. Cl.[4] H01J *31/50*

U.S. Cl. 250—213 VT **5 Claims**



1. A semiactive night viewing system comprising:

means for receiving an image of a scene and for generating a signal corresponding to the image;

means for receiving the image signal and for displaying an image corresponding to the image signal;

means for illuminating the scene with a flash of light having a wavelength outside the visible spectrum, said flash having a very short duration and low power;

means for storing the image signal corresponding to the illuminated scene and for reading out the stored image signal and displaying it in the display device;

means for preventing further flashes during display of the stored image signal; and

means for removing the display of the stored image signal and for displaying a passive image of the scene.

4,642,453

APPARATUS FOR INCREASING THE DYNAMIC RANGE IN AN INTEGRATING OPTOELECTRIC RECEIVER

Glenn O. Nordqvist, Solna, and Lars-Göte Svenson, Stockholm, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

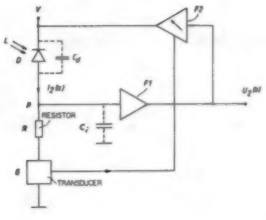
PCT No. PCT/SE85/00133, § 371 Date Nov. 8, 1985, § 102(e) Date Nov. 8, 1985, PCT Pub. No. WO85/04773, PCT Pub. Date Oct. 24, 1985

PCT Filed Mar. 26, 1985, Ser. No. 810,333

Claims priority, application Sweden, Apr. 12, 1984, 8402056

Int. Cl.[4] H01J *40/14*

U.S. Cl. 250—214 A **4 Claims**



1. In an integrating optoelectric receiver having a supply voltage source across which is connected a two-terminal optoelectric converter and an output amplifier having an input

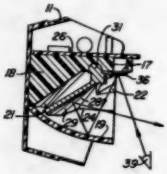
connected to one of said terminals having associated therewith stray capacitance and an output which is the output of the receiver, the improvement comprising a controllably variable voltage regulating means connected between the output of said output amplifier and the other terminal of said optoelectric converter, said voltage regulating means having a control input for controlling the magnitude of the regulation, and a transducer means having an output for generating a control signal which is a function of the luminance sensed by said optoelectric converter, and means for connecting the output of said transducer means to the control input of said voltage regulating means.

4,642,454

INFRARED INTRUSION DETECTOR WITH FIELD OF VIEW LOCATOR

Paul S. Carlson, Santa Cruz, Calif., assignor to Raytek, Inc., Santa Cruz, Calif.

Filed Aug. 27, 1984, Ser. No. 644,768
Int. Cl.[4] G01V 9/04
U.S. Cl. 250—221 **7 Claims**



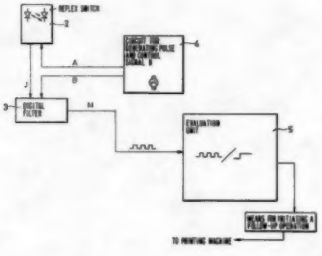
1. In an infrared intrusion detector: a sensing element responsive to infrared energy, an optical system for focusing infrared energy from a plurality of fields of view onto the sensing element, means connected to the sensing element for providing an output signal in response to movement of an object in one of the fields of view, and an additional optical mirror positioned at about the focal point of said optical system and oriented such that a person looking at the additional optical mirror sees the fields of view detected by the sensing element through the optical system.

4,642,455

CIRCUIT ARRANGEMENT USING FOR A LIGHT BARRIER FOR DETECTING SHEET-FEEDING FAULTS IN A PRINTING PRESS

Anto Rodi, and Udo Blasius, both of Leimen, Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,281
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305606
Int. Cl.[4] G01V 9/04
U.S. Cl. 250—221 **5 Claims**



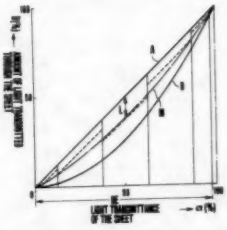
1. Circuit arrangement including a light barrier for detecting absence or presence of an opaque object at a given location, comprising means for transmitting a light signal in direction toward an anticipated position of the object, means for receiving said signal, means for evaluating said received signal after an anticipated time delay, and means for initiating a follow-up operation in response to the evaluation of said received signal, said transmitting and receiving means constituted by a reflex light barrier, a digital filter being connected between said transmitting and receiving means and said evaluating means and including first and second parallel-connected bistable flip-flop circuits, a delayed pulse train timingly enabling the inputs of the respective flip-flops at the anticipated time for receipt of the leading and trailing edge of said received signal, the second one of said flip-flop circuits having an inverted clock input, for repeatedly setting said flip-flops in response to repeated timingly confirming the proper position of the object.

4,642,456

DOUBLE SHEET DETECTION METHOD AND APPARATUS OF SHEET-FED ROTARY PRESS

Hideo Watanabe, Abiko, Japan, assignor to Komori Printing, Tokyo, Japan

Filed Mar. 25, 1985, Ser. No. 715,311
Int. Cl.[4] G01N 9/04; G06M 7/00
U.S. Cl. 250—223 R **6 Claims**



1. A double sheet detection method for a sheet-fed rotary press, comprising the steps of:

setting a theoretical reference value as a difference between a first theoretical amount of light transmitted through one sheet and an intermediate value; said intermediate value lying between said first theoretical amount of light transmitted through one sheet and a second theoretical amount of light transmitted through two sheets;

storing the theoretical reference value in correspondence with the amount of light transmitted through a sheet;

calculating a difference between an amount of light transmitted through a first sheet and an amount of light transmitted through a second sheet when actual printing is performed;

reading out the theoretical reference value which corresponds to the amount of light transmitted through the first sheet and which is defined as an actual reference value;

comparing the difference obtained in the calculating step with the actual reference value; and

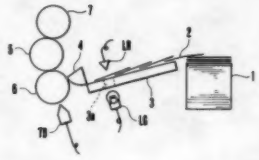
performing double sheet detection in accordance with a comparison result.

4,642,457

DOUBLE SHEET DETECTION METHOD AND APPARATUS OF SHEET-FED ROTARY PRESS

Hideo Watanabe, Chiba, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 574,879
Int. Cl.[4] G01N 9/04
U.S. Cl. 250—223 R 8 Claims



1. A double sheet detection method used in a sheet-fed rotary press, comprising the steps of:

setting a theoretical reference value as an intermediate value between a first theoretical amount of light transmitted through one sheet and a second theoretical amount of light transmitted through two sheets, respectively;

subtracting the theoretical reference value from the first amount of light to obtain a theoretical subtracted value;

subtracting the theoretical subtracted value from an actual amount of light transmitted through a reference sheet to obtain an actual reference value; and

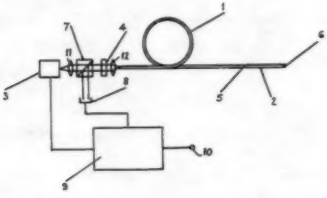
comparing an actual amount of light transmitted through a current sheet with the actual reference value to perform double sheet detection.

4,642,458

POLARIMETRIC FIBRE SENSOR

David A. Jackson, Canterbury, England; Michael Corke, Wheaton, Ill., and Alan D. Kersey, Washington, D.C., assignors to Kent Scientific and Industrial Projects Limited, Kent, England

PCT No. PCT/GB85/00017, § 371 Date Sep. 5, 1985, § 102(e) Date Sep. 5, 1985, PCT Pub. No. WO85/03124, PCT Pub. Date Jul. 18, 1985
PCT Filed Jan. 18, 1985, Ser. No. 774,589
Int. Cl.[4] G02F 1/01
U.S. Cl. 250—225 7 Claims



1. Optical fibre sensing apparatus characterised by:

(a) an optical fibre lead (1) spliced to a shorter optical sensing fibre (2),

(b) said lead and sensing fibres (1,2) comprising birefringent optical fibres having substantially orthogonal eigen modes (13,16 and 14,15) and being spliced together with their eigen modes mutually rotated by substantially 45°,

(c) a reflective surface disposed at the distal end (6) of the sensing fibre,

(d) light source means (3) for propagating linearly polarised incident light along one of the eigen modes (13) of the lead fibre (1), whereby light beams are propagated along both eigen mdoes of the sensing fibre (2) and are reflected from the distal end (6) of the sensing fibre to propagate return light beams along both eigen modes (13,16) of the lead fibre,

(e) recovery means (7,8) for recovering one of the returning light beams from the lead fibre and producing an electrical signal corresponding to modal birefringence of the sensing fibre, and

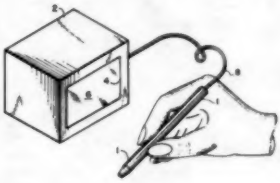
(f) means (9) for processing the electrical signal and producing an output signal corresponding to the polarisation mode delay of the sensing fibre.

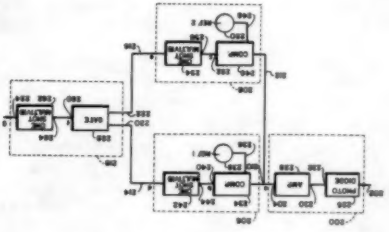
4,642,459

LIGHT PEN INPUT SYSTEM HAVING TWO-THRESHOLD LIGHT SENSING

Nathan S. Caswell, Yorktown Heights, and Ifay F. Chang, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 17, 1985, Ser. No. 735,430
Int. Cl.[4] G02B 6/00
U.S. Cl. 250—227 27 Claims





18. A light pen arrangement for use in an interactive display of a computer system comprising:

a display having a screen phosphor, and an electron beam for scanning the phosphor;

a light pen with an optical field of view larger than a single scan line;

first threshold detection means for sensing when said scanning electron beam enters the field of view of said light pen;

second threshold detection means for sensing when said electron beam has scanned across the center region of the field of view of said light pen; and

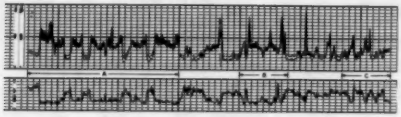
means for determining a fixed time interval following each low threshold detection, the position of said light pen being determined by the position of said scanning electron beam at the end of said fixed time interval when a high threshold detection has also been made during said time interval.

4,642,460

TECHNIQUE FOR LOCATING INJECTED GAS IN OIL BEARING FORMATIONS BEHIND CASING

James P. Wallace, Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 27, 1984, Ser. No. 686,807
Int. Cl.[4] G01V *5/10*
U.S. Cl. 250—256 **1 Claim**



1. A method for determining the location of injected gas in an oil well comprising the steps of:

obtaining data representing a near count rate from a compensated neutron logging tool;

obtaining data representing a far count rate from a compensated neutron logging tool;

scaling said near count rate and said far count rate;

plotting said scaled near count rate and said scaled far count rate;

comparing said scaled near count rate plot and said scaled far count rate plot; and

determining the location of injected gas whenever said plot of said scaled near count rate and said plot of said scaled far count rate differ by a predetermined factor;

obtaining data representing a second near count rate from a compensated neutron logging tool at a second time;

obtaining data representing a second far count rate from a compensated neutron logging tool at said second time;

scaling said second near count rate and said second far count rate;

plotting said scaled second near count rate and said scaled second far count rate;

comparing said scaled second near count rate plot and said scaled second far count rate plot;

determining a second location of injected gas whenever said plot of said scaled second near count rate and said plot of said scaled second far count rate differ by a predetermined factor; and

determining the migration of said injected gas by comparing said location with said second location.

4,642,461

FIELD EMISSION TYPE ELECTRON MICROSCOPE USING A MULTI-STAGE ACCELERATION TUBE

Junji Endo, Kokubunji; Akira Tonomura, Koganei; Susumu Ozasa, Kashiwa; Tsuyoshi Matsuda, Tokyo; Chikara Kimura, Katsuta, and Nobuyuki Osakabe, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1984, Ser. No. 676,313
Claims priority, application Japan, Nov. 30, 1983, 58-224095
Int. Cl.[4] G01N *23/00*
U.S. Cl. 250—311 **6 Claims**

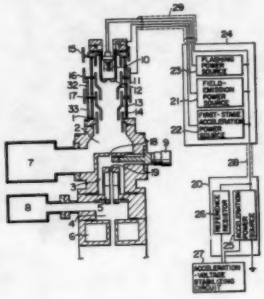
1. A field emission type electron microscope using a multi-stage acceleration tube, comprising:

a field emission cathode;

a field emission electrode for causing field emission of electrons from said cathode, said field emission electrode having an aperture provided therein;

acceleration electrode means including a first-stage acceleration electrode and at least one succeeding-stage acceleration electrode for accelerating an electron beam passing through said aperture of said field emission electrode; and

application voltage interlocking means for changing, an acceleration voltage to be applied across said field emission cathode and at least one acceleration electrode of said acceleration electrode means inclusive of said first-stage acceleration electrode, in interlocked relationship with a change in a field emission voltage to be applied across said field emission cathode and said field emission electrode, said application voltage interlocking means interlocking



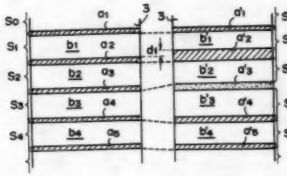
said acceleration voltage with said field emission voltage so as to provide a ratio of said acceleration voltage to said field emission voltage in a range of 6 to 15.

4,642,462

METHOD OF CORRECTING RADIATION IMAGE READ-OUT ERROR

Toshitaka Aagano, and Yoshimi Takasaki, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Jul. 18, 1984, Ser. No. 631,844
Claims priority, application Japan, Jul. 19, 1983, 58-131566
Int. Cl.[4] G03G *5/16*
U.S. Cl. 250—327.2 **5 Claims**



1. A method of correcting a radiation image readout error comprising steps of

two-dimensionally scanning a stimulable phosphor sheet carrying a radiation transmission image stored therein with stimulating rays in a main scanning direction and a sub-scanning direction, the main scanning being effected by use of a multifaceted deflector having a plurality of deflecting surfaces,

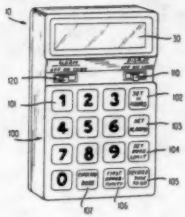
photoelectrically detecting light emitted by said stimulable phosphor sheet upon stimulation thereof by the stimulating rays to convert the light emitted by the stimulable phosphor sheet to an electric image signal, and

correcting the electric image signal obtained from each main scan line by use of a correction coefficient which is predetermined for each main scan line according to the amount of shift of the main scan line from the predetermined position thereof in the sub-scanning direction.

4,642,463
INTELLIGENT RADIATION MONITOR

William H. Thoms, 4401 Lee Hwy., Arlington, Va. 22207

Filed Jan. 11, 1985, Ser. No. 690,547
Int. Cl.[4] G01T 1/17
U.S. Cl. 250—336.1 22 Claims

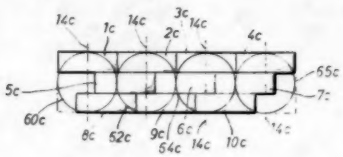


1. A personal radiation monitor comprising:
a radiation detector producing rate information related to real time radiation exposure rate to which said radiation detector is exposed,
a digital processor responsive to said radiation detector for integrating said rate information to maintain total dose information,
output means responsive to information provided by said digital processor for providing a manifestation of at least said rate and total dose information,
said digital processor including:
first means for repeatedly comparing said total dose information to dose limit information to produce dose-to-go information related to the difference between said total dose information and the dose limit information,
second means for, repeatedly, dividing said dose-to-go information by said rate information to produce and thereafter update time-to-go information related to time-to-go for the user to reach said dose limit, and
third means for controlling said output means for providing a manifestation of said updated time-to-go information.

4,642,464
POSITRON EMISSION TOMOGRAPHY CAMERA

Nizar A. Mullani, Houston, Tex., assignor to Clayton Foundation for Research, Houston, Tex.

Continuation-in-part of Ser. No. 613,699, May 24, 1984, Pat. No. 4,563,582. This application Aug. 23, 1985, Ser. No. 768,906
Int. Cl.[4] G01T 1/164
U.S. Cl. 250—363 S 7 Claims

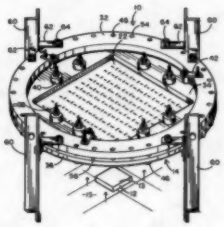


1. In a positron emission tomography camera having a plurality of detector planes positioned side-by-side around a patient area to detect radiation therefrom, each plane containing a plurality of scintillation detectors pointed to the patient area, each plane of detectors defining a plane slice through the patient area by the detectors in each plane, and each two adjacent detector planes defining an interplane slice through the patient area, the improvement in the detectors comprising,
each detector plane including a plurality of photomultiplier tubes,
at least three scintillation crystals positioned on each photomultiplier tube in each plane for detecting radiation from the patient area which the tubes convert into electrical pulses,
said crystals positioned on each photomultiplier tube such that whereby each photomultiplier tube is responsive to all of said crystals on the tube,
said crystals on each photomultiplier tube being offset from the other crystals on each photomultiplier tube, and the area of each crystal on each photomultiplier tube being different than the area of the other crystals on each photomultiplier tube so as to allow detection of which crystal is actuated and to allow the detectors to detect more interplane slices.

4,642,465
AVALANCHE COUNTER AND ENCODER SYSTEM FOR COUNTING AND MAPPING RADIOACTIVE SPECIMENS

Roy J. Britten, Costa Mesa, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 370,333, Apr. 21, 1982, Pat. No. 4,500,786. This application Oct. 15, 1984, Ser. No. 660,692
Int. Cl.[4] G01T 1/185
U.S. Cl. 250—389 20 Claims



1. An apparatus for detecting radioactive sources on a test specimen, the apparatus comprising:
a counter having a gas filled chamber, said chamber being formed by an electrically conductive planar window and a parallel semiconductive surface spaced from said window, and adapted for having an electric field imposed within said chamber by a voltage differential between said window and said semiconductive surface;
an encoder surface spaced from said semiconductive surface and having geometrically arrayed elements thereon for receiving an electrical charge induced on said elements by an ion avalanche occurring within said chamber in response to entry of a radioactive particle into said chamber; and
a dielectric layer between said semiconductive surface and said encoder surface, said semiconductive surface forming a coating on one side of said layer and said arrayed elements forming a coating on the opposite side of said layer.

4,642,466
FAST COUNTING ELECTRONICS FOR NEUTRON COINCIDENCE COUNTING

James E. Swansen, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 5, 1985, Ser. No. 708,477
Int. Cl.[4] G01T 3/00
U.S. Cl. 250—392 13 Claims

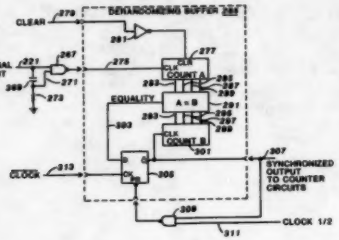
1. A high speed circuit for accurate neutron coincidence counting comprising:
neutron detecting means for providing an above-threshold signal upon neutron detection;
amplifying means inputted by said neutron detecting means for providing a pulse output having a pulse width of about

0.5 microseconds upon the input of each above-threshold signal;

digital processing means inputted by said pulse output of said amplifying means for generating a pulse responsive to each input pulse from said amplifying means and having a pulse width of about 50 nanoseconds effective for processing an expected neutron event rate of about 1 Mpps:

pulse stretching means inputted by said digital processing means for producing a pulse having a pulse width of several milliseconds for each pulse received from said digital processing means;

visual indicating means inputted by said pulse stretching means for producing a visual output for each pulse received from said digital processing means;



derandomizing means effective to receive said 50 ns neutron event pulses from said digital processing means for storage at a rate up to said neutron event rate of 1 Mpps and having first counter means for storing said input neutron event pulses, clock means for generating internal pulses in a regular spaced apart fashion while said first counter is storing said input event pulses and at a rate at least equal to an average expected neutron event rate, synchronizing counter means and event counter means for counting said clock pulses, and comparison means for blocking said clock pulses to said synchronizing and event counters when said comparison means determines said first and synchronizing counter contents are equal, said event counter means having a countinuous output indicative of a total number of said neutron events.

4,642,467

ELECTRON BEAM IRRADIATION APPARATUS

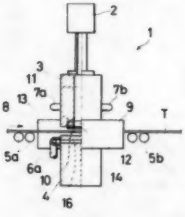
Masakatsu Yamawaki, Ikeda; Isamu Sakamoto, Kyoto; Kenichi Mizusawa, Ibaraki, and Eiji Iwamoto, Kyoto, all of Japan, assignors to Nissin-High Voltage Co., Ltd., Kyoto, Japan

Filed Dec. 13, 1984, Ser. No. 681,117

Claims priority, application Japan, Dec. 16, 1983, 58-238510

Int. Cl.[4] G01K *1/08;* **H01J** *3/00*

U.S. Cl. 250—492.3 **10 Claims**



1. An electron beam irradiation appartus for simultaneously (a) irradiating a target comprising a substrate and magnetic particles with an electron beam and (b) orienting the axis of easy magnetization of the magnetic particles in a direction perpendicular to the substrate, said apparatus comprising an electron beam source which is capable of generating an electron beam and irradiating it in one direction, a first magnet member having a through hole and being disposed to allow the electron beam irradiated from said electron beam source to pass therethrough to the target, means for maintaining the through hole under vacuum, a second magnet member which is disposed opposite the first magnet member across a gap which allows the target to pass therethrough and which second magnet member has a polarity different from that of the first magnet member, the two magnet members coacting to produce a magnetic field in the gap, a target supporting/shifting means which allows the target to pass through said gap perpendicular to the flux of the magnetic field, and cooling means which cools both magnet members, the gap between the first and second magnet members being from 5 to 100 millimeters.

4,642,468

POSITION DETECTING METHOD FOR DETECTING THE RELATIVE POSITIONS OF THE FIRST AND SECOND MEMBERS

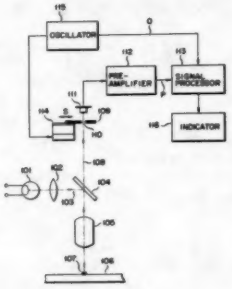
Mitsuo Tabata, and Nobuo Shibuya, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 13, 1984, Ser. No. 681,491

Claims priority, application Japan, Dec. 19, 1983, 58-239392

Int. Cl.[4] G01N *21/86*

U.S. Cl. 250—548 **20 Claims**



1. A position detecting method for detecting relative positions of a first member and a second member, comprising the steps of:

radiating a first beam radiated from a beam radiating source onto a first member where a first mark portion is formed;

radiating a second beam obtained from said first mark portion due to the beam irradiation onto a second member where a second mark portion is formed;

detecting by a beam detector, of a beam obtained from said second member by radiating said second beam onto the second member, and relatively vibrating said second beam and said second member, and detecting a detection output from said beam detector synchronously with said vibration, thereby obtaining a fundamental wave component a_f and an n-th order harmonic component a_{nf} (n is an integer of 2 or more) of said detection output;

performing a function conversion with said fundamental wave component a_f and said n-th order harmonic component a_{nf} used as input signals such that output signals a_f^*, a_{nf}^* are free from change in level regardless of change in level of the input signals so as to noralize the input signals a_f, a_{nf} and thus, to obtain normalized signals a_f^*, a_{nf}^*; and

detecting the relative positions of said first and second members by use of the signals a_f^* and a_{nf}^* obtained by performing said function conversions.

4,642,469

THREE-DIMENSIONAL REFLECTORS FOR OBJECT ATTITUDE RECOGNITION

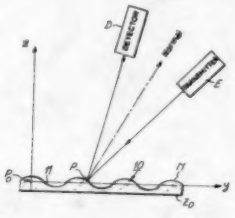
Francis Bretaudeau, Fontenay-Aux-Roses, and Marc Sarazin, Paris, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, France

Filed Dec. 27, 1984, Ser. No. 686,684

Claims priority, application France, Dec. 27, 1983, 83 20862; Dec. 27, 1983, 83 20863

Int. Cl.[4] G01V 9/04

U.S. Cl. 250—561 12 Claims



1. A reflector intended to be illuminated by a radiating source and to produce, in response to this illumination, a discreet array of light points aligned along a locus on said reflector, characteristic of the reflector position with respect to the radiating source, and intended to be detected by a detector means, said reflector having a center of symmetry and comprising a corrugated surface formed with a plurality of adjacent undulations, parallel and spatially periodic, each carrying a crest and a trough, said undulations being arranged such that said locus runs through the center of symmetry of the reflector and the foot point of the perpendicular dropped a detector means onto said surface, said foot point being a determinate point of said locus.

4,642,470

METHOD AND AN APPARATUS FOR THE IDENTIFICATION OF METAL CANS

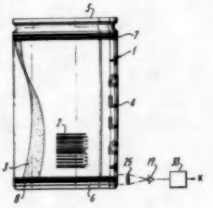
Tore Planke, Nyuirke, Norway, assignor to A/S Tomra Systems, Oslo, Norway

Filed Feb. 7, 1984, Ser. No. 577,863

Claims priority, application Norway, Feb. 7, 1983, 830400

Int. Cl.[4] G06K 7/10

U.S. Cl. 250—566 14 Claims



1. A method for the identification of a beverage can comprising:

illuminating a plurality of contrasting alternately arranged stripes which are imprinted on the can, the stripes extending continuously around the entire circumference of the can such that the orientation of the circumferential surface of the can is not critical to the identification;

detecting the light reflected from said contrasting stripes with a detector, such that a pulsed signal is generated, the pulsed signal shape being a function of the relative widths of the stripes; and

calculating an identification value for the can, said value being a function of the relative widths of the stripes.

4,642,471

SCATTERED RADIATION SMOKE DETECTOR

Hannes Güttinger, Stäfa, and Gustav Pfister, Uetikon, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

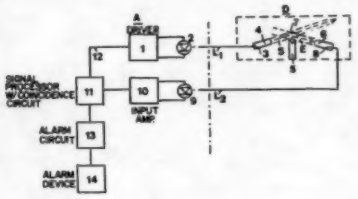
PCT No. PCT/CH83/00111, § 371 Date Apr. 16, 1984, § 102(e) Date Apr. 16, 1984, PCT Pub. No. WO84/01650, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 5, 1983, Ser. No. 606,828

Claims priority, application Switzerland, Oct. 11, 1982, 5944/82

Int. Cl.[4] G01N 21/53

U.S. Cl. 250—574 40 Claims



1. A scattered radiation smoke detector for generating an alarm signal in response to detection of smoke, comprising:

an evaluation circuit comprising means for generating an alarm signal in response to electromagnetic radiation scattered by smoke and comprising means for emitting electromagnetic radiation;

at least two radiation conducting elements for connecting the scattered radiation smoke detector to the evaluation circuit;

a measuring volume into which said electromagnetic radiation emitted by said evaluation circuit is radiated;

at least one radiation conducting element through which said electromagnetic radiation is radiated into said measuring volume;

at least one radiation conducting element by which electromagnetic radiation scattered from smoke particles in said measuring volume is received and transmitted back to said evaluation circuit;

said at least one radiation conducting element through which said electromagnetic radiation is radiated into said measuring volume having a radiation exit and said at least one radiation conducting element for receiving said scattered electromagnetic radiation having a radiation entry;

at least two collimating devices provided each at an associated one of said radiation exit and said radiation entry for generating an associated one of an at least approximately non-divergent transmitting zone of small cross-section and an at least approximately non-divergent receiving zone of small cross-section;

said radiation conducting elements as well as said collimating devices being arranged and oriented such that said transmitting and receiving zones thereof intersect;

said at least one radiation conducting element through which said electromagnetic radiation is radiated into said measuring volume defining a forward direction in which said electromagnetic radiation is radiated into said measuring volume; and

said at least two collimating devices being structured and oriented such that said transmitting and receiving zones define at least approximately parallel beams which intersect at an acute angle such that one of said at least two

collimating device receives radiation scattered at an acute angle in said forward direction.

4,642,472

OPTICAL IMAGE READER FOR READING AN IMAGE ON A GIVEN MANUSCRIPT

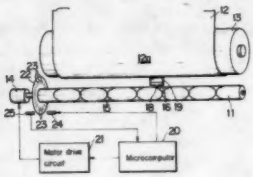
Yujiro Ishikawa, Toyoda, Japan, assignor to Brother Industries, Ltd., Nagoya, Japan

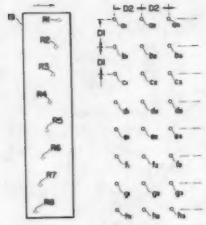
Filed Aug. 28, 1984, Ser. No. 645,046

Claims priority, application Japan, Aug. 31, 1983, 58-160112

Int. Cl.[4] H04N *1/028, 1/06*

U.S. Cl. 250—578 **10 Claims**





1. An optical reader for reading an image made up to a plurality of image points arranged at predetermined intervals in a first direction and formed on a manuscript comprising:

a reading head with a plurality of reading elements arranged in a second direction different than said first direction, said head being moveable in a third direction perpendicular to said first direction with respect to said manuscript, to bring sequentially each of said ready elements in a coincident position with one of said points; and

means for selectively activating the elements in said coincident position, to discern the image.

4,642,473

ELECTRICAL CIRCUIT ARRANGEMENT AND ELECTRICAL CIRCUIT UNIT FOR USE IN SUCH AN ELECTRICAL CIRCUIT ARRANGEMENT

Stewart F. Bryant, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

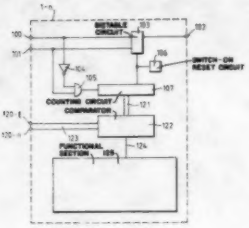
Filed Mar. 20, 1985, Ser. No. 713,968

Claims priority, application United Kingdom, Mar. 23, 1984, 8407620

Int. Cl.[4] H02J *1/00*

U.S. Cl. 307—38 **25 Claims**

5. An electrical circuit arrangement comprising a plurality of circuit units connected to a common path, each of the circuit units having an input for receiving a control signal and including a control circuit having a first input for receiving a clock signal, a second input connected to the control signal input and an output connected to an input of an address generator, said address generator being provided for generating addresses in response to said clock signal applied thereto under control of said control signal, said circuit arrangement further comprising a control arrangement for generating successive control signals synchronously with the clock signal, said control arrangement comprising a sub-arrangement in each circuit unit, a first input of each sub-arrangement being connected to the control signal input of its respective circuit unit, said clock signal being applied to a second input of each sub-arrangement and an output of each sub-arrangement being connected to a control signal output of its respective circuit unit, each sub-arrangement being provided for generating one of said successive



control signals subsequent to receipt of a control signal on its first input, the control signal output of each circuit unit being connected to the control signal input of at least one succeeding unit when present, at least one circuit unit comprising means for enabling the control signal input and the control signal output to be used for other circuit functions once the address generator has been generated the address.

4,642,474

ELEVATOR RESCUE APPARATUS DURING STOPPAGE OF POWER SUPPLY

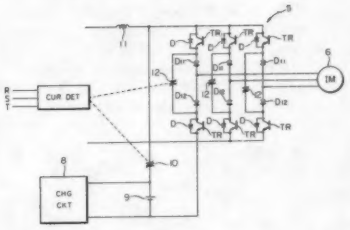
Eiki Watanabe, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1986, Ser. No. 838,586

Claims priority, application Japan, Mar. 13, 1985, 60-49920

Int. Cl.[4] H02J *9/04;* **B66B** *5/02*

U.S. Cl. 307—64 **6 Claims**



1. An elevator having a rescue apparatus during a stoppage of power supply, the apparatus operating the elevator with an emergency power source while the A.C. power source is abnormal; comprising:

(a) a converter which converts alternating current of the A.C. power source into direct current,

(b) an inverter which is connected to said converter and which inverts the direct current into alternating current, said inverter being constructed of a bridge circuit in which a plurality of arms are connected in parallel, said each arm being composed of a pair of transistors connected in series and a pair of diodes inserted between said pair of transistors and connected in series in the same polarity as that of the series transistor circuit,

nodes of the pairs of diodes being respectively connected to a motor for driving a cage of the elevator, to feed the

motor with the alternating current of variable voltage and variable frequency,

(c) the emergency D.C. power source which is connected across D.C. side input parts of said inverter,

(d) first switching means inserted between said emergency D.C. power source and said inverter, said means being held in an open state while said A.C. power source is normal and being brought into a closed state to electrically connect said emergency D.C. power source to said inverter when said A.C. power source has become abnormal, and

(e) second switching means connected in parallel with said pair of diodes of said each arm, said means being held in an open state to keep said pair of diodes effective while said A.C. power source is normal and being brought into a closed state to form a circuit bypassing said pair of diodes and to keep a voltage polarity of a D.C. side of said inverter unchanged when said A.C. power source has become abnormal.

4,642,475

UNINTERRUPTIBLE POWER SUPPLY

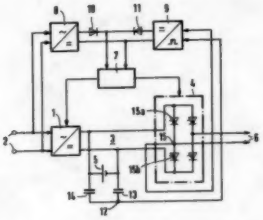
Dietmar Fischer, and Christian Kublick, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed May 20, 1985, Ser. No. 736,226

Claims priority, application Fed. Rep. of Germany, May 24, 1984, 3419420

Int. Cl.[4] H02M *5/45*; H02J *7/34*

U.S. Cl. 307—66 **2 Claims**



1. An uninterruptible power supply for connection to an a.c. power line having a first rectifier circuit, comprising:

an intermediate circuit connected to the output of said first rectifier circuit;

a battery as part of said intermediate circuit for storing electrical energy;

a voltage divider as part of said intermediate circuit connected across said battery and having an electrical terminal which under open circuit conditions is the midpoint of the voltage across the battery;

an inverter circuit having a bridge configuration of power components connected to said intermediate circuit on the input side of said bridge;

an inverter control circuit, connected to the control terminals of said bridge configuration power components; and

a second rectifier circuit, connected to one of the output terminals of said inverter bridge circuit, and to said midpoint of said voltage divider as the input to said second rectifier, providing d.c. power through a decoupling diode to said inverter control circuit during periods of a.c. power line outage.

4,642,476

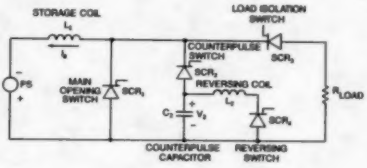
REVERSING-COUNTERPULSE REPETITIVE-PULSE INDUCTIVE STORAGE CIRCUIT

Emanuel M. Honig, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 5, 1984, Ser. No. 617,653

Int. Cl.[4] H03K *3/00*

U.S. Cl. 307—108 **8 Claims**



1. A reversing-counterpulse repetitive-pulse inductive storage circuit comprising:

a. a dc voltage source having a positive and a negative output;

b. a load having a first and a second end, said first end thereof connected to said positive output of said dc voltage source;

c. a storage coil having a first and a second end, said first end thereof connected to said negative output of said dc voltage source;

d. main opening unidirectional triggerable means connected between said second end of said storage coil and said positive output of said dc voltage source for initially being closed to permit the charging of the storage coil to fixed current level and for opening when current flowing through said main opening unidirectional triggerable means is reduced to zero;

e. a counterpulse capacitor having a first and a second end, the first end thereof connected to the positive end of said dc voltage source, said counterpulse capacitor initially charged to a fixed voltage;

f. counterpulse unidirectional triggerable means connected between said second end of said storage coil and said second end of said counterpulse capacitor for initiating a transfer cycle by closing thereby causing said counterpulse capacitor to discharge rapidly through said main opening unidirectional triggerable means so as to reduce current flow therethrough to zero and thereafter providing a current path for recharging said counterpulse capacitor by said storage coil and for opening when current flowing through said load reaches the level of current flowing through said storage coil;

g. load isolation unidirectional triggerable means connected between said second end of said storage coil and said second end of said load for closing when said counterpulse capacitor has been recharged by said storage coil thereby initiating a current through said load which continues until terminated by reclosing said main opening unidirectional triggerable means;

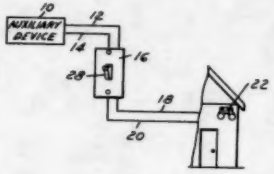
h. a reversing coil having a first and a second end, said first end thereof connected to said second end of said counterpulse capacitor; and

i. reversing unidirectional triggerable means connected between said second end of said reversing coil and said positive end of said dc voltage source for closing after current has ceased flowing through said load and while said main opening unidirectional triggerable means is closed to reverse the charge on said counterpulse capacitor by a oscillation through said reversing coil and by opening when current therethrough goes through zero.

4,642,477
AUTOMATIC LIGHT SIGNALLING SYSTEM

Edmund S. Grzanowski, Jr., 35311 Barton Dr., Westland, Mich. 48185, and Philip J. Glengary, 4542 Walden Dr., Birmingham, Mich. 48010

Filed Jun. 3, 1985, Ser. No. 740,564
Int. Cl.[4] H01H *47/00*
U.S. Cl. 307—113 **9 Claims**



1. An electric light signalling system comprising a lighting circuit and a control circuit,

the lighting circuit comprising at least one manually operable switch and normally closed relay in series therewith, a bypass circuit comprising a normally open relay in parallel with said switch and normally closed relay, said lighting parallel circuits connectable to a source of power and to lighting in series therewith,

the control circuit comprising means to regulate an input voltage, a first relay solenoid in parallel with the input voltage regulation means, a second relay solenoid and means to momentarily interrupt the electric current through the second relay solenoid in series therewith, said second solenoid and interrupt means in parallel with the first relay solenoid.

cyclic timing means connected to said interrupt means, said cyclic timing means actuatable by the means to regulate an input voltage,

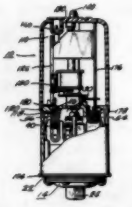
said normally closed relay actuatable by the first relay solenoid, and

said normally open relay actuatable by the second relay solenoid in response to cyclic actuation of the interrupt means.

4,642,478
MECHANICALLY OPERATED PRESSURE SWITCH HAVING SOLID STATE COMPONENTS

Myron A. Noth, Asheville, N.C., assignor to Square D Company, Palatine, Ill.

Continuation of Ser. No. 512,494, Jul. 11, 1983, abandoned. This application Jan. 3, 1986, Ser. No. 816,675
Int. Cl.[4] H01H *35/34*
U.S. Cl. 307—118 **6 Claims**



1. A motor control switch including a mechanically operated switch portion comprising a support having a periphery,

a lever pivotally mounted on the support,

a post having an end secured to the support and extending through an opening in the lever to a threaded end,

a spring seat positioned on the threaded end,

a compression spring surrounding the post and positioned between the spring seat and the lever,

a pressure responsive mechanism positioned by the support to urge the lever in a direction to compress the spring,

an insulating block positioned by the support,

a plurality of stationary contact structures positioned by the block with each contact structure including a stationary contact and a terminal member,

a plurality of movable contacts moved by the lever into and from engagement with the stationary contacts,

a cover for the switch, said cover having an interior area and including a peripherial skirt positioned adjacent the periphery of the support and a dividing wall separating a front chamber from a rear chamber in the interior area of the cover, with the rear chamber enclosing the mechanically operated switch portion and the front chamber enclosing a plurality of electronic components,

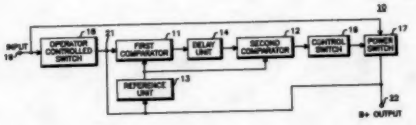
a plurality of separable connectors extending through openings in the dividing wall and arranged to connect components in the front chamber with selected stationary contact structures in the rear chamber,

and means extending from a front end of the cover through the front chamber into a threaded engagement with the threaded end of the post for securing the cover to the support.

4,642,479
POWER DISTRIBUTION DEVICE

Steven A. Lombardi, Lake Zurich, and David O. Potter, Lake Villa, both of, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1985, Ser. No. 720,124
Int. Cl.[4] H01H *7/00*
U.S. Cl. 307—141 **13 Claims**



1. A power distribution device having:

(a) a first input for operably connecting to a power source;

(b) a second input for operable connection to a switch having selectively variable conductive states;

(c) an output;

(d) first means for sensing when said switch has a predetermined conductive state and for providing an output signal in response thereto;

(e) second means responsive to said output signal of said first means for providing a control signal;

(f) power switch means responsive to said control signal for selectively connecting and disconnecting said output to said first input;

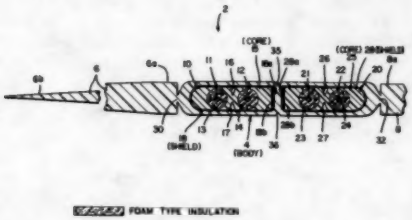
(g) delay means for delaying said second means response to a change in said output signal; and

(h) reference means for providing a reference signal to said first means to faciltate the provision of said output signal, wherein said reference means includes a power input for connection to said power switch means such that said reference means can receive operating power therefrom and wherein said second means receives said reference signal as well to thereby facilitate provision of said control signal.

4,642,480
LOW PROFILE CABLE WITH HIGH PERFORMANCE CHARACTERISTICS

Richard L. Hughes, Clemmons; Anthony W. Turney, Walnut Cove, both of N.C., and Raymond J. Look, Largo, Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 27, 1985, Ser. No. 716,417
Int. Cl.[4] H01B 7/08; H02G 3/18
U.S. Cl. 307—147 10 Claims



1. An electrical distribution system for installation under a carpet along a floor of a pre-existing building, for transmitting high frequency signals between system components arbitrarily distributed in the building; comprising:

an undercarpet flat cable comprising a plurality of pairs of electrical signal wires located in a common plane and spaced from each other along their lengths, each pair being separately embedded intermediate the ends thereof within an insulating core, each core being surrounded by a shield; multiple shielded insulating cores being embedded within a common insulating body; the body, the shield and the core being progressively removed from the wires adjacent at least one end;

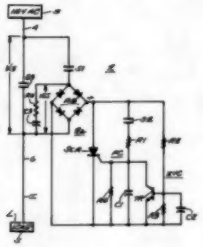
first and second outlet receptacles mounted adjacent the floor and disposed at opposite ends of the cable, the portion of the cable having the body, the shield, and the core progressively removed being within the outlet receptacles; and

an electrical connector interconnected at each end of the cable having the body, the shield and the core progressively removed to the signal wires and to each shield being mounted within the outlet receptacles for interconnection to a mating electrical connector.

4,642,481
SOLID STATE HYBRID SWITCH

Ralph F. Bielinski, South Milwaukee; James R. Jaeschke, Waukesha; Slobodan Krstic, Milwaukee; Earl T. Piber, Oconomowoc, and Peter J. Theisen, West Bend, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 8, 1985, Ser. No. 763,843
Int. Cl.[4] H03K 17/72
U.S. Cl. 307—252 UA 10 Claims



1. A solid state hybrid switch for connecting an A.C. power supply source to a load (load turn-on) and disconnecting said source from said load (load turn-off) so as to limit electromagnetic interference (EMI) to a low value comprising:

a solid state circuit comprising solid state A.C. power switching means and a zero voltage crossing circuit for limiting operation of said solid state A.C. power switching means to portions of the voltage wave of said A.C. source having an amplitude below a given small value to limit said EMI:

bypass contacts for completing a connection from said source to said load independently of said solid state A.C. power switching means;

series contacts operable when closed for connecting said solid state A.C. power switching means in circuit with said source and load and operable when open for isolating said solid state A.C power switching means from said source;

control switching means effective when placed in "on" state for rendering said solid state A.C. power switching means operable under the control of said zero voltage crossing circuit and effective when restored to "off" state for rendering said solid state A.C. power switching means inoperative at or near zero current;

means responsive to closure of said series contacts for rendering said zero voltage crossing circuit operative to allow operation of said solid state A.C. power switching means when said source voltage goes below a given low value and said control switching means is in said "on" state and to prevent operation thereof whenever said source voltage is above said given value;

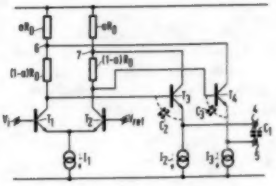
and contact control means operable on said load turn-on for closing said series contacts first, placing said control switching means in its "on" state next and closing said bypass contacts last and said contact control means being operable on said load turn-off for opening said bypass contacts first, restoring said control switching means to said "off" state next and opening said series contacts last;

said solid state A.C. power switching means being of a type that restores to stop conducting at the next zero current crossing of said A.C. source following said restoring of said control switching means to its "off" state.

4,642,482
LEVEL-SHIFTING CIRCUIT

Wolfdietrich G. Kasperkovitz, and Johannes C. M. Meeuwis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1985, Ser. No. 743,252
Claims priority, application Netherlands, Jun. 12, 1984, 8401847
Int. Cl.[4] H03K 5/01
U.S. Cl. 307—264 6 Claims



1. A level shifting circuit comprising:

a differential amplifier comprising a first transistor and a second transistor, whose collectors are each coupled to a power-supply terminal via a load resistor,

a first voltage-follower circuit comprising a third transistor connected as an emitter follower and having its base coupled to the collector of the first transistor, and

a second voltage-follower circuit comprising a fourth transistor connected as an emitter follower and having its base coupled to the collector of the second transistor, characterized in that

the collector of the third transistor is coupled to a tapping on the load resistor of the second transistor, and

the collector of the fourth transistor is coupled to a tapping on the load resistor of the first transistor.

4,642,483

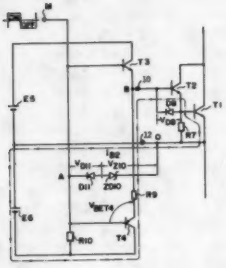
REVERSE BIAS CURRENT SUPPLY SYSTEM FOR A SWITCHING DEVICE

Hiroo Tomita, Kawasaki, Japan, assignor to Fuji Electric Company Ltd., Kawasaki, Japan

Filed Oct. 12, 1984, Ser. No. 660,202

Int. Cl.[4] H03K *19/08, 3/26*

U.S. Cl. 307—300 **15 Claims**



1. A system for supplying a base reverse bias current to a switching semiconductor device having a turn-off period, comprising:

first means receiving a switching signal and including a path for a control current for switching said switching semiconductor device, said first means supplying said control current to said switching semiconductor device through said path;

second means receiving said switching signal for controlling said switching semiconductor device, said second means supplying a base reverse bias current to said switching semiconductor device through a portion of said path of said first means when said switching signal is interrupted; and

third means having a circuit including a constant voltage device connected in series with said first means through which said base reverse bias current flows for clamping a voltage across said circuit to control said base reverse bias current substantially at a fixed level during the turn-off period of said switching semiconductor device.

4,642,484

LATCHING COMPARATOR WITH HYSTERESIS

Timothy J. Skovmand, San Jose, and Michael J. Mottola, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 19, 1985, Ser. No. 725,042

Int. Cl.[4] H03K *5/153*

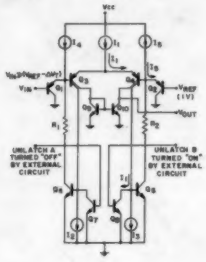
U.S. Cl. 307—362 **17 Claims**

1. A latching comparator circuit with hysteresis comprising:

differential amplifier means having first and second inputs and first, second, third, and fourth outputs, said first and second inputs for respectively receiving input and reference signals, said differential amplifier means responsive to said input and reference signals for respectively producing first, second, third, and fourth currents at said first, second, third and fourth outputs;

output circuit means coupled to said first and second outputs, said output circuit means having a fifth output and providing at said fifth output an output signal capable of assuming one or another of two states in response to said first and second currents;

first latch control means coupled to said first input and said third output, said first latch control means having a first control signal input for receiving a first control signal, said first latch control means for controlling said first, second, third, and fourth currents, said first latch control means responsive to said first latch control signal such that when said input signal has a first predetermined relationship with said reference signal said output signal changes from said one of said two states to said another of said two states and prevents said output signal from changing from said another of said two states to said one of said two states; and



second latch control means coupled to said second input and said fourth output, said second latch control means having a second control signal input for receiving a second control signal, said second latch control means for controlling said first, second, third, and fourth currents, said second latch control means responsive to said second latch control signal such that when said input signal has a second predetermined relationship with said reference signal said output signal changes from said another of said two states to said one of said two states and prevents said output signal from changing from said one of said two states to said another of said two states.

4,642,485

DIGITAL SWITCHING CIRCUIT HAVING INSULATED GATE FIELD EFFECT TRANSISTORS FOR CLAMPING THE NONCONDUCTIVE OUTPUT TRANSISTOR OFF

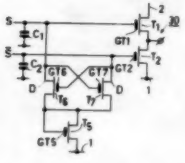
Bernardus H. J. Cornelissen, and Henricus E. J. Wulms, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,235

Claims priority, application Netherlands, Nov. 8, 1983, 8303835

Int. Cl.[4] H03K *19/003, 19/094*

U.S. Cl. 307—443 **6 Claims**



1. A digital switching circuit which comprises first and second insulated gate field effect transistors, conduction channels located between source and drain electrodes of the transis-

tors being connected in series between a first and a second supply terminal, in operation the first transistor receiving at its gate electrode a first control signal and the second transistor receiving at its gate electrode a second control signal such that one of the transistors is rendered conducting and the other transistor is rendered non-conducting, the first control signal being an inverted version of the second control signal, and switchable clamping means, characterized in that the gate electrodes of the first and the second transistors are connected to said switchable clamping means for keeping the gate electrode of only the non-conducting transistor at a voltage level equal to or lower than the threshold voltage of the non-conducting transistor.

4,642,486

DECODER CIRCUIT USING TRANSISTORS OR DIODES OF DIFFERENT CHARACTERISTICS

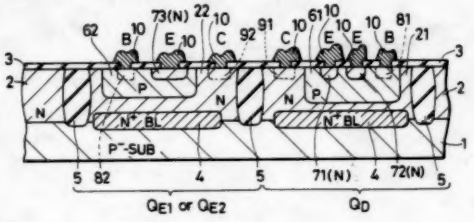
Noriyuki Honma, Kokubunji; Hiroaki Nambu, Hachioji; Isao Yoshida, Nishitama; Hisayuki Higuchi, Kokubunji, and Kunihiko Yamaguchi, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

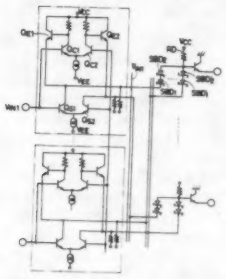
Filed Dec. 27, 1984, Ser. No. 686,660

Claims priority, application Japan, Dec. 28, 1983, 58-246935

Int. Cl.[4] H03K *19/013, 19/082, 19/092;* **G11C** *8/00*

U.S. Cl. 307—463 **8 Claims**





1. A decoder circuit composed of at least one current switch means which provides current to either one of two output terminals in response to an input signal applied to an input terminal of said at least one current switch means, a charging circuit means including output emitter follower transistors for pulling up the signal level of said output terminals, and at least one multi-emitter transistor with its base and collector being commonly connected to form a junction, emitters of which are connected to the corresponding output terminals of said current switch means and said charging circuit means, wherein the improvement comprises:

the output emitter follower and multi-emitter transistors being structurally designed so that the voltage across the base and the emitter regions of said at least one multi-emitter transistor is larger than the voltage across the base and the emitter regions of each of said emitter follower transistors.

4,642,487

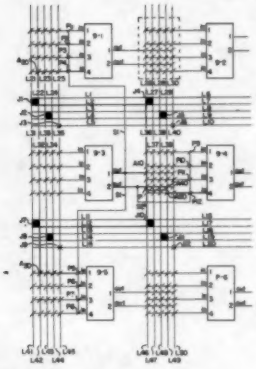
SPECIAL INTERCONNECT FOR CONFIGURABLE LOGIC ARRAY

William S. Carter, Santa Clara, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Sep. 26, 1984, Ser. No. 655,007

Int. Cl.[4] H03K *17/693*

U.S. Cl. 307—465 **3 Claims**



1. A configurable logic array comprising:

a plurality of configurable logic elements (CLEs), each CLE having at least one input lead and at least one output lead;

a general interconnect structure comprising a plurality of general interconnect leads and a plurality of programmable general interconnect junctions for interconnecting selected ones of said general interconnect leads;

one or more input access junctions for each input lead, each of said input access junctions being programmable for connecting a corresponding general interconnect lead to said input lead;

one or more output access junctions for each output lead, each of said output access junctions being programmable for connecting said output lead to a corresponding general interconnect lead;

means for programming said general interconnect junctions and said access junctions to provide an electrical path connecting one of said at least one output lead of one of said plurality of CLEs to one of said at least one input lead of one of said plurality of CLEs, said electrical path containing two access junctions and at least a portion of one of said general interconnect leads; and

at least one special interconnection circuit which permits a selected output lead of one of said CLEs to be connected to a selected input lead of another CLE, said special interconnection circuit not containing any portion of the general interconnect leads or any junction in the general interconnect structure.

4,642,488

CMOS INPUT BUFFER ACCEPTING TTL LEVEL INPUTS

Lanny L. Parker, Mesa, Ariz., assignor to Codex Corporation, Mansfield, Mass.

Filed Sep. 3, 1985, Ser. No. 772,223

Int. Cl.[4] H03K *19/094*

U.S. Cl. 307—475 **13 Claims**

1. A method of translating transistor-transistor logic (TTL) level input signals into complementary metal oxide semiconductor (CMOS) level output signals in an input buffer circuit, said method comprising:

providing an input terminal for accepting said TTL level input signals;

providing an output terminal for outputting said CMOS level output signals;

providing first and second supply voltages;

generating first and second reference voltages;

providing first and second CMOS inverter stages, said first CMOS inverter stage being coupled to said input terminal and generating high and low level output signals, said second CMOS inverter stage being responsive to said output signals of said first CMOS inverter stage and generating high and low level output signals to said output terminal;

coupling said first reference voltage to said first CMOS inverter stage, the magnitude of said first reference voltage being of a predetermined value relative to one of said TTL level input signals, such that when said one TTL level input signal is applied at said input terminal said first CMOS inverter stage generates said low level output signal without providing a DC path; and

coupling said second reference voltage to said second CMOS inverter stage, the magnitude of said second reference voltage being of a predetermined value relative to said first CMOS inverter stage high level output signal, such that when said first CMOS inverter stage high level output signal is applied to said second CMOS inverter stage said second CMOS inverter stage generates said low level output signal at said output terminal without providing a DC path.

4,642,489

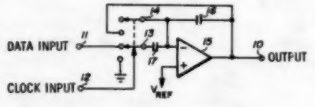
SAMPLED DATA AMPLITUDE LINEAR PHASE DETECTOR

Milton E. Wilcox, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 3, 1984, Ser. No. 657,328

Int. Cl.[4] H03K *5/26, 5/159, 5/00*

U.S. Cl. 307—514 **4 Claims**



1. A sampled data phase detector circuit having a data input terminal connectible to a data signal, a clock input terminal connectible to a clock input signal, and an output terminal, said circuit comprising:

a differential amplifier having inverting and noninverting inputs and an output that comprises said circuit output terminal;

means for coupling a reference potential to said differential amplifier noninverting input;

first capacitor means coupled between said differential amplifier output and inverting input;

first switch means coupled across said first capacitor means and operated from said clock input terminal whereby said first capacitor means is periodically discharged and said differential amplifier inverting input is forced to said reference potential;

second switch means having a single pole double throw operation with the pole thereof being actuated in response to the signal at said clock input terminal to switch between first and second positions, said first position being coupled to said circuit data input terminal and said second position being coupled to ground; and

second capacitor means coupled between said second switch means pole and said differential amplifier inverting input whereby said differential amplifier output terminal develops a d-c voltage that is proportional to the phase difference between said data signal and said clock signal.

4,642,490

AMPLITUDE VARIATION SUPPRESSION ARRANGEMENTS

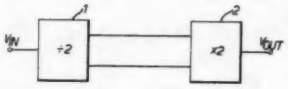
Rodney J. Lawton, Wiltshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Dec. 10, 1984, Ser. No. 679,873

Claims priority, application United Kingdom, Dec. 9, 1983, 8332897

Int. Cl.[4] H03K *5/08;* **G06G** *7/16*

U.S. Cl. 307—540 **2 Claims**



1. An arrangement for suppressing amplitude variation in FM signals, the arrangement comprising:

frequency divider means for frequency dividing an incoming FM signal of varying amplitude when the amplitude of the FM incoming signal is above a threshold value to provide first and second frequency divided signals each having two discrete levels and being of substantially constant amplitude; and

frequency multiplier means coupled to the frequency divider means for receiving the first and second frequency divided signals and multiplying the first and second frequency divided signals to provide an output signal of substantially constant amplitude and having a frequency equal to that of the incoming signal.

4,642,491

SINGLE TRANSISTOR DRIVER CIRCUIT

Donald M. Kenney, Shelburne, and Jack A. Mandelman, Underhill, both of Vt., assignors to International Business Corporation, Armonk, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,375

Int. Cl.[4] H03K *17/687, 17/56;* **N01L** *29/80*

U.S. Cl. 307—571 **14 Claims**

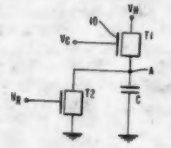
1. A driver circuit comprising

a field effect transistor,

a capacitor serially connected with said transistor, and

means for operating said transistor in a sustaining mode, said operating means including means for applying a control voltage to a control gate of said transistor and means for applying a voltage differential in excess of a sustaining

voltage of said transistor across said transistor and said capacitor, said voltage differential being equal to or



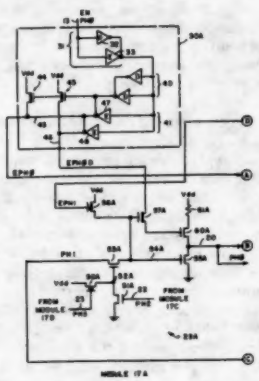
greater than the snap back voltage of said transistor at said control voltage.

4,642,492

MULTIPLE PHASE CLOCK BUFFER MODULE WITH NON-SATURATED PULL-UP TRANSISTOR TO AVOID HOT ELECTRON EFFECTS

John C. Beck, Northborough, and Daniel W. Dobberpuhl, Shrewsbury, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 25, 1984, Ser. No. 664,858
Int. Cl.[4] H03K *17/06, 17/693*
U.S. Cl. 307—578 **8 Claims**



1. A clock buffer circuit for generating a clock signal in response to a timing signal and a first enabling signal, said clock buffer circuit comprising:

a. input means for receiving said first enabling signal;

b. means responsive to said timing signal for generating a second enabling signal, both enabling signals being initially in a high condition prior to the time the clock signal is to be asserted and said first enabling signal being in a low condition at the time said clock signal is to be asserted; and

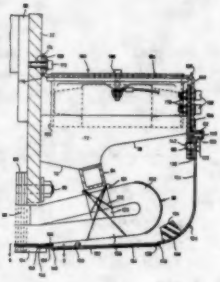
c. signal generating means comprising resistor means, pull-up transistor means and pull-down transistor means serially connected between high and low power supplies, said pull-up transistor means being connected to receive said second enabling signal through a switch means conditioned in response to the assertion of said first enabling signal to couple said second enabling signal to said pull-up transistor means and said pull-down transistor means being connected to receive said first enabling signal, said resistor means being selected to maintain both said transistor means in a non-saturated condition when conducting, the node between said pull-up transistor and said pull-down transistor comprising an output terminal for transmitting said clock signal, such that both said pull-up and pull-down transistor means are energized by said enabling signals to conduct prior to the time the clock signal is to be high, said pull-down transistor being de-energized and said switch means being conditioned in response to the negation of said first enabling signal to isolate said pull-up transistor from said low power supply and said second enabling signal whereby the voltage level at said output terminal is increased due to the charge stored in the intrinsic capacitance in the pull-up transistor.

4,642,493

INTEGRALLY AIR COOLED LINEAR INDUCTION MOTOR

A. K. Wallace, Corvallis, Oreg., assignor to Urban Transportation Development Corporation Ltd., Toronto, Canada

Filed Apr. 25, 1985, Ser. No. 727,387
Int. Cl.[4] H02K *41/02*
U.S. Cl. 310—13 **20 Claims**



1. A primary member for a linear induction motor comprising an elongate core,

a motor winding having a plurality of turns spaced apart along said core and extending transversely thereto, said turns each having end windings projecting to opposite sides of said core and each including a knuckle portion to reverse the direction of said winding,

a pair of side cover assemblies extending along said core to either side thereof and encompassing said end winding,

a plurality of fans located on opposite sides of said core and outboard thereof to direct air from one side of a respective side cover assembly to the other side and outlet means provided on said other side to permit egress of air so as to cool said end winding, and baffle means located between said end windings and said side cover assemblies to direct air between the end windings of adjacent turns.

4,642,494

MEANS TO IMPROVE PERFORMANCE OF ELECTRIC MOTORS

Robert S. Lundin, Northfield, and Demetris Petritis, New Britain, both of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed Oct. 2, 1985, Ser. No. 782,932
Int. Cl.[4] H02K *19/12*
U.S. Cl. 310—49 R **5 Claims**

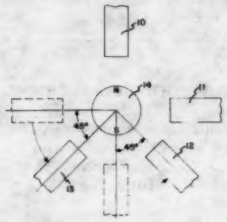
1. An electric motor, comprising:

(a) a rotor having a pair of N-S magnetic poles radially displaced symmetrically thereon; and

(b) first and second sets of stator poles radially disposed about the rotor, each set of stator poles being energized by the passage of electric current through coils wound upon the poles to provide flux linkage with the rotor poles, with successive energization and de-energization of the stator poles causing rotation of the rotor, with the stator poles of the first set disposed in the positions they would occupy if

all the stator poles were radially disposed symmetrically about the rotor, and with the stator poles

of the second set disposed in positions displaced by a given mechanical angle of displacement, equal to 180° divided by the product of the number of a harmonic of the funda-



mental torque/angle curve times the number of rotor pole pairs, from the positions they would occupy if all the stator poles were radially disposed symmetrically about the rotor, whereby the displacement causes the harmonic to be attenuated.

4,642,495

ELECTRIC ROTARY MACHINE HAVING SUPERCONDUCTING ROTOR

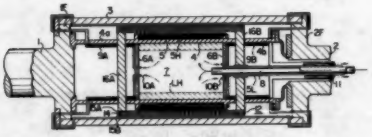
Takanobu Mori; Yutaka Fukui; Tetsuo Kashimura, all of Hitachi, and Yoshimi Yanai, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 467,808, Feb. 18, 1983, abandoned. This application Apr. 23, 1985, Ser. No. 726,394

Claims priority, application Japan, Feb. 19, 1982, 57-24488

Int. Cl.[4] H02K *9/00*

U.S. Cl. 310—52 **9 Claims**



1. An electric rotary machine having a superconducting rotor, wherein said superconducting rotor comprises a driving shaft having at an end thereof a flange portion, a hollow shaft confronting said driving shaft with a gap therebetween and having a flange portion, a torque tube connected between said flange portions, a field winding provided on an outer peripheral surface of said torque tube, said torque tube having a coolant pool therein, coolant supply means for supplying a coolant to said coolant pool through said hollow shaft, an inner shielding member formed of a cylindrical non-magnetic body and provided so as to surround the field winding, a cylindrical outer shielding member disposed so as to surround the inner shielding member and connected between said flange portions, said outer shielding member being a cylindrical single-layer body, coolant discharge means for collecting said coolant from said coolant pool through said hollow shaft, and a power lead passing through said hollow shaft for supplying said field winding with electric power, and wherein said outer shielding member is made of a non-magnetic nickel alloy containing 0.05 to 0.25% carbon, 0.01 to 0.5% silicon, 0.01 to 0.5% manganese, 0.01 to 0.6% titanium, 2.5 to 6.0% aluminum, 9.2 to 15.0% copper, and the balance nickel by weight, said alloy having such a structure that a γ'-phase precipitation is formed by hard-aging in an austenitic matrix.

4,642,496

DEVICE FOR DETECTING THE ANGULAR POSITION OF THE ROTOR OF A ROTARY ELECTRIC MACHINE WITH ELECTRONIC SWITCHING

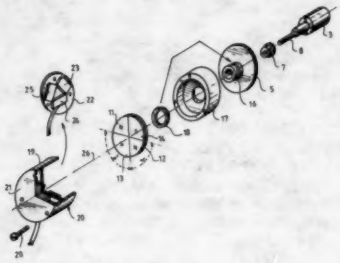
Alain Kerviel, and Rémy Barbarin, both of Chatellerault, France, assignors to Societe Francaise d'Equipements pour la Navigation Aeriene (S.F.E.N.A.), France

Filed May 22, 1985, Ser. No. 736,740

Claims priority, application France, May 22, 1984, 84 08300

Int. Cl.[4] H02K *11/00*

U.S. Cl. 310—68 B **5 Claims**



1. A device for detecting the angular position of the rotor of a rotating electric machine comprising, inside a body, a rotor mounted for rotation about a first rotation axis in a stator, said rotor and said stator being equipped with two respective mutually facing magnetic circuits and comprising a plurality of magnetic poles of alternating polarity, said device further comprising:

an additional disk mounted coaxially on the shaft of the rotor and comprising a radial face;

first and second pluralities of permanent magnets in the form of circular sectors which produce a magnetic field independent on that of said rotor and said stator and which are arranged concentrically to a center point located on said first rotational axis and bonded to the radial face of the disk, the permanent magnets of said first plurality each having a first polarity and first and second radial edges which form a first angle, the permanent magnets of the second plurality each having a second polarity and third and fourth radial edges which form a second angle, and the permanent magnet of the first plurality alternating with the permanent magnets of the second plurality with each radial edge of the permanent magnets of the first plurality extending against one radial edge of one permanent magnet of the second plurality so as to cover said radial face;

Hall effect proximity cells each having sensible surfaces in a plane parallel to said radial plane and in the vicinity thereof, said cells being carried by a structure mounted for rotation about a second rotational axis coaxial to said first rotational axis, and

means for locking said structure against rotation on said body.

4,642,497

HERMETIC COMPRESSOR UNIT AND STATIONARY ASSEMBLY

John H. Boyd, Jr., Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 30, 1984, Ser. No. 605,225

Int. Cl.[4] H02K *11/00*

U.S. Cl. 310—68 R **17 Claims**

1. A hermetic compressor unit driven by a dynamoelectric machine therein adapted to be energized from a source of power, the unit comprising:

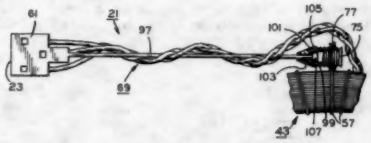
a housing having a hermetically sealed chamber therein;

connection means mounted to said housing so as to extend in

part therethrough into said chamber and adapted for connection with the power source, said connection means including a set of electrical connectors;

a stationary assembly of said dynamoelectric machine disposed within said chamber and including a core having a pair of opposite end faces, a bore extending generally axially through said core and intersecting with said opposite end faces, and a plurality of winding means receiving slots intersecting with both said bore and said opposite end faces, respectively;

winding means associated with said core and adapted for excitation upon the energization of the dynamoelectric machine, said winding means including a plurality of coils formed of conductor material having a coating of dielectric material thereon and each coil having at least one conductor loop with opposite side loop portions thereof being disposed in said slots of said core and with opposite end loop portions thereof being arranged in generally annular groupings adjacent said opposite end faces of said core, respectively, some of said coils defining a main winding of said winding means and others of said coils defining an auxiliary winding of said winding means; a pair of main winding lead ends integral with said main winding and extending from one of said end loop groupings, a pair of auxiliary winding lead ends integral with said auxiliary winding and extending from said one end loop grouping of said winding means, one of said main winding lead ends and one of said auxiliary winding lead ends being twisted together to define a common lead end of said winding means; and a set of terminals on said common lead end, the other of said main winding lead ends, and the other of said auxiliary winding lead ends, respectively;



assembly means for associating said winding means in circuit relation with said electrical connectors of said connection means, said assembly means including: casing means removably mounted to said electrical connectors of said connection means for receiving said terminals and for connecting them in circuit relation with said electrical connectors of said connection means, respectively, an elongate member integral with said casing means and extending therefrom generally toward said one end loop grouping of said winding means, a free end portion on said elongate member, a first abutment on said free end portion, a retaining member disposed at least adjacent said one end loop grouping of said winding means, a pair of stepped passages in said retaining member, said free end portion of said elongate member extending through one of said stepped passages, and a second abutment on said retaining member between said stepped passages thereof; said first abutment on said free end portion of said elongate member being movable in the other of said stepped passages of said retaining means so as to engage with said second abutment thereby to establish a lost motion engagement between said elongate member and said retaining member;

a pair of means associated with said end loop groupings of said winding means for lacing them, respectively, and one of said lacing means associated with said one end loop grouping of said winding means being interconnected in engagement with said retaining member of said associating means thereby to at least generally maintain said retaining member against displacement from its disposition at least adjacent said one end loop grouping of said winding means in the event of the occurrence of the lost motion engagement between said first and second abutments of said elongate member and said retaining member, respectively;

a set of generally elongate tubes of a dielectric material encasing said other main winding lead end, said other auxiliary winding lead end, and said common lead end, and extending generally between said casing means and said one end loop grouping of said winding means; said elongate tubes with said other main winding lead end, said other auxiliary winding lead end, and said common lead end encased therein being twisted together generally into a twisted bundle and also generally spirally wrapped about at least a part of said elongate member between said casing means and said retaining member, respectively;

a compressor within said chamber including means for mounting engagement with said dynamoelectric machine;

a set of means for resiliently mounting both said compressor and said dynamoelectric machine to said housing, respectively;

a rotor disposed at least in part within said bore of said stator and associated in magnetic coupling relation with said winding means upon the excitation thereof; and

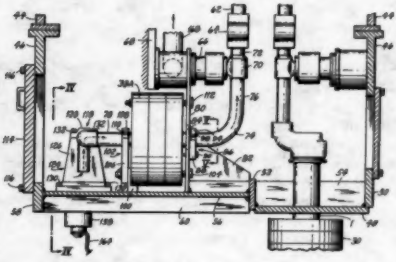
a shaft supporting said rotor and drivingly interconnected with said compressor.

4,642,498

INTERNAL COMMON NEUTRAL BUS IN LARGE THREE-PHASE GENERATOR

James B. Archibald, and Frederick J. Rink, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 18, 1985, Ser. No. 810,814
Int. Cl.[4] H02K *11/00*
U.S. Cl. 310—71 **5 Claims**



1. A three-phase generator including a stator rotatably disposed within said stator comprising:

a stator frame containing said stator;

a rotor rotatably disposed within said stator;

at least first, second and third windings in said stator;

each of said first, second and third windings including a first and a second end;

a frame extension in said stator frame;

means for connecting said first ends of said first, second and third windings to first, second and third high-voltage terminals in said bottom panel;

at least first, second and third neutral current transformers each having an axis;

means for rigidly affixing said first, second and third neutral current transformers to said frame extension within said stator frame with said axes of said first, second and third neutral current transformers disposed in a horizontal direction;

means for passing current from said second ends of said first, second and third windings through said first, second and third current transformers, respectively;

a common neutral bus downstream of said first, second and third current transformers;

said common neutral bus including means for electrically interconnecting said first, second ends;

means in said common neutral bus for disconnecting said second ends of said first, second and third windings from each other;

a neutral terminal in said frame extension; and conductor means for electrically connecting said common neutral bus to said neutral terminal.

4,642,499

CASING MEANS FOR ELECTRICAL MACHINE

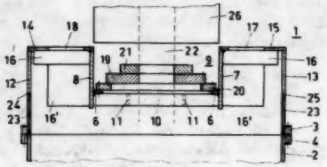
Ernst Brem, Schlieren, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 16, 1985, Ser. No. 766,344

Claims priority, application Switzerland, Sep. 14, 1984, 4397/84

Int. Cl.⁴ H02K *5/00*

U.S. Cl. 310—89 **7 Claims**



1. An electrical machine comprising:

(a) an outer casing, said outer casing being at least generally cylindrical in shape;

(b) a rotor shaft disposed axially in said outer casing, a first end of said rotor shaft projecting outwardly from said outer casing;

(c) a bearing block journalling the first end of said rotor shaft; and

(d) an end casing fastened to said outer casing, said end casing comprising:

(i) a first flat plate disposed perpendicularly to said rotor shaft, said first flat plate extending vertically when said electrical machine is in use, said first flat plate having a central hole sized and shaped to permit a rotor mounted on said rotor shaft to be removed axially from said outer casing without dismantling said end casing from said outer casing, said first flat plate having a first straight edge, a second straight edge, a first arcuate edge, and a second arcuate edge, said first and second straight edges extending vertically when said electrical machine is in use and said first and second arcuate edges being between said first and second straight edges at the top and the bottom of said electrical machine, respectively;

(ii) a second flat plate and a third flat plate, both said second and third flat plates being disposed perpendicularly to said first flat plate, said second flat plate being joined to said first straight edge of said first flat plate and said third flat plate being joined to said second straight edge of said first flat plate, said second and third flat plates each having an axially inner edge and an axially outer edge;

(iii) a first flat, arc-shaped cover and a second flat, arc-shaped cover, both said first and said second flat, arc-shaped covers being disposed perpendicularly to said rotor shaft, said first flat, arc-shaped cover having an arcuate edge and a straight edge, the straight edge of said first flat, arc-shaped cover being joined to the axially outer edge of said second flat plate and said second flat, arc-shaped cover having an arcuate edge and a straight edge, the straight edge of said second flat, arc-shaped cover being joined to the axially outer edge of said third flat plate;

(iv) a first part-cylindrical plate and a second part-cylindrical plate, said first and second part-cylindrical plates each having an axially inner edge and an axially outer edge, said axially inner edges of said first and second part-cylindrical plates being joined to said outer casing, aid axially outer edge of said first part-cylindrical plate being joined to the arcuate edge of said first flat, arc-shaped cover, and said axially outer edge of said second part-cylindrical plate being joined to the arcuate edge of said second flat, arc-shaped cover; and

(v) an inspection opening located in at least one of said first and second flat, arc-shaped covers.

4,642,500

CONTROL ARRANGEMENT FOR MAGNETIC BEARING APPARATUS

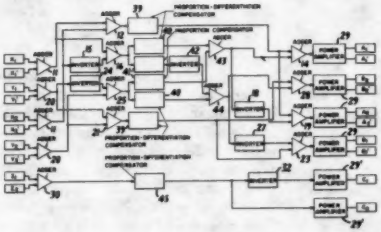
Toshiro Higuchi, Yokohama; Takeshi Mizuno, and Noboru Aikawa, both of Tokyo, all of Japan, assignors to Seiko Seiki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 682,811, Dec. 18, 1984, abandoned, which is a continuation of Ser. No. 439,325, Nov. 4, 1982, abandoned. This application Jan. 2, 1986, Ser. No. 815,674

Claims priority, application Japan, Nov. 11, 1981, 56-180712

Int. Cl.⁴ F16C *39/06*

U.S. Cl. 310—90.5 **2 Claims**



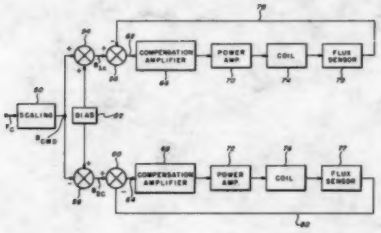
1. A magnetic bearing apparatus for rotatably supporting a rotatable body comprising: radial magnetic bearings each having at least two pairs of electromagnets surrounding the rotatable body, and arranged at suitable distances along the rotatable body; radial sensors surrounding the rotatable body and arranged at suitable distances along the rotating body to detect radial deviation of the rotatable body at each sensor; first optimum regulating means for one degree of freedom for extracting the radial deviation of the rotatable body from the output signal of said sensors and for generating a first control signal corresponding to the deviation; second optimum regulating means for two degrees of freedom including inverse symmetrical cross-linking feedback means for extracting the angular deviation of the rotatable body on the perpendicular radial axis from the output signal of said sensors and for generating a second control signal corresponding to gyro action caused by the compensating torque on the perpendicular radial axis for the angular deviation; and control means for controlling the input power applied to said electromagnets in response to said first and second control signals.

4,642,501

MAGNETIC SUSPENSION AND POINTING SYSTEM WITH FLUX FEEDBACK LINEARIZATION

Kevin D. Kral, Phoenix, and Douglas D. Havenhill, Peoria, both of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 15, 1985, Ser. No. 786,979
Int. Cl.[4] F16C *39/00*
U.S. Cl. 310—90.5 **9 Claims**



1. Apparatus for magnetic suspension comprising:

a. an armature of ferromagnetic material moveable between predetermined limits along a first axis and freely moveable in translation along a cross-axis normal to said first axis,

b. magnetic actuator means for applying a force on said armature along said first axis, the magnitude of said force depending on the magnitude of the magnetic flux across a gap formed between said armature and a pole piece disposed on said actuator means, said actuator means comprising a pair of half-stations disposed on opposite sides of said armature along said first axis, each of said half-stations further comprising a magnetically permeably core having co-operable pole pieces, said core caring an electro-magnetic coil adapted when energized for conducting magnetic lines of flux between said cooperable pole pieces and said armature, said pole pieces spaced apart from said armature by an airgap along said first axis, said core positioned to apply magnetic force along said first axis to provide a predetermined displacement of said armature from at least one of said pole pieces,

c. means for providing a force command signal representative of a desired armature force,

d. means responsive to said force command signal for deriving a flux command signal representative of a desired flux density, said flux command signal coupled to supply control currents to said electromagnetic coils,

e. means coupled to said core for sensing said lines of flux and deriving flux control signals representative of an actual flux density, and

f. means coupled to receive said flux control signals and said flux command signals for modifying said control currents of said electromagnetic coils, so as to produce a magnetic flux density linearly corresponding to said force command signal.

4,642,502

DYNAMOELECTRIC MACHINE WITH PERMANENT MAGNET AND MAGNET MOUNTING SURFACE ARRANGEMENT

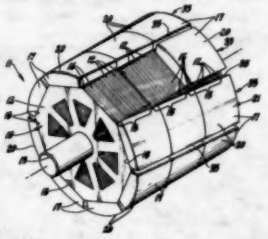
Keith H. Carpenter, Kettering; Jon E. Miller, Spring Valley, and John W. Murphy, Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 24, 1986, Ser. No. 855,344
Int. Cl.[4] H02K *1/18*
U.S. Cl. 310—156 **5 Claims**

2. A dynamoelectric machine having a rotor and a stator, one of the rotor and stator comprising a plurality of wound electromagnetic poles, the other of the rotor and stator comprising, in combination:

a core comprising a plurality of substantially identical lamina of a magnetic material each having a polygonal circumference, the lamina being axially stacked in groups with the lamina of each group forming flat, rectangular, magnet mounting surfaces, each group of lamina, proceeding from one axial end of the core, being rotationally offset about the common axis by a common angle of rotation from the previous group of lamina; and

a plurality of identically shaped permanent magnets mounted one on each of the magnet mounting surfaces, the magnets having flat surfaces adjacent the magnet



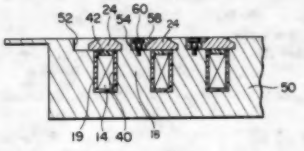
mounting surfaces and arcuate surfaces opposite the flat surfaces, the arcuate surfaces forming a generally cylindrical surface adjacent the wound electromagnetic poles, each of the magnets further having the shape, when viewed radially, of a parallelogram forming a skew angle with the axis corresponding with the rotational offset of the magnet mounting surfaces to define skewed slots between skewed magnetic poles extending the substantial axial length of the core.

4,642,503

ROTOR FOR A SUPERCONDUCTING ROTATING ELECTRIC MACHINE

Akinori Ueda, and Kouichi Okamoto, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1985, Ser. No. 751,899
Claims priority, application Japan, Jul. 5, 1984, 59-140796; Jul. 5, 1984, 59-140799; Jul. 5, 1984, 59-140802; Jul. 5, 1984, 59-140803; Jul. 5, 1984, 59-140805; Jul. 5, 1984, 59-140807
Int. Cl.[4] H02K *3/48*
U.S. Cl. 310—214 **23 Claims**



1. A rotor for a superconducting rotating electric machine comprising:

a cylindrical coil-carrying shaft having a plurality of parallel coil slots formed in the surface thereof, each of said coil slots having straight portions extending in the longitudinal direction of said shaft, arcuate portions extending in the circumferential direction of said shaft at the ends of said

straight portions, and corners which connect the straight portions and the arcuate portions of said slots, said shaft also having a plurality of rotor teeth formed therein whose sides are defined by the sides of said coil slots, each of said rotor teeth having wedge grooves formed therein for the insertion of wedges, each of said rotor teeth having a recess formed therein in at least the portion adjoining the corners of said coil slots;

a plurality of field coils, each of which is housed in one of said coil slots;

a plurality of wedges which fit into said wedge grooves in said rotor teeth and fit over said field coils so as to prevent the radial movement of said coils; and

detachable retaining means for preventing the movement of said wedges and said coils housed in the portions of said coil slots adjoining said recesses.

4,642,504

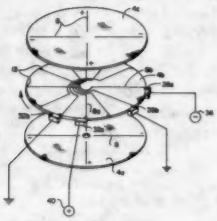
ELECTRIC FIELD MACHINE

Stephen C. Jacobsen, Salt Lake City, Utah, assignor to Sarcos, Inc., Salt Lake City, Utah

Filed Apr. 8, 1983, Ser. No. 483,110

Int. Cl.⁴ H02N *1/00*

U.S. Cl. 310—308 **13 Claims**



1. An electric field machine comprising

first and second pluralities of elongate elements, wherein said elongate elements are capable of being charged with an electrical charge, and each of said elongate elements has a width of between about 200 and 5000 angstroms,

the first plurality of elongate elements being disposed in a first array,

the second plurality of elongate elements being disposed in a second array which is spaced in close proximity of between about 200 and 5000 angstroms to the first array, with said second array being movable with respect to said first array,

either the first or second plurality of elements being electrically charged, with certain elements being charged negatively and the other elements, interspersed among the certain elements, being changed positively, and

means for successively applying electrical charges to the other plurality of elements to produce electric force fields which cause the second plurality of elements to move with respect to the first plurality of elements, said electrical charge applying means including means for alternately applying negative charges and positive charges to selected ones of the elements of said other plurality and for alternately applying positive charges and negative charges to the other of such elements interspersed among the selected elements.

4,642,505

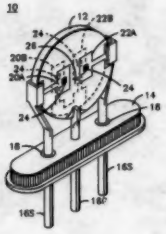
LASER TRIMMING MONOLITHIC CRYSTAL FILTERS TO FREQUENCY

Aristotelis S. Arvanitis, Addison, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 5, 1984, Ser. No. 585,967

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—312 **52 Claims**



1. An improved method of adjusting the resonant frequency of a piezoelectric device having a plurality of electrodes positioned on opposing surfaces of a crystal wafer to form at least one piezoelectric resonator, including the steps of:

laser machining the electrode material from the respective resonator electrode to adjust the frequency of said resonator to a desired value,

said laser machining being effected in the approximate geometric center of said electrode in a single contiguous area manner, whereby the Q of said piezoelectric device is minimally affected by said laser machining.

4,642,506

SURFACE ACOUSTIC WAVE DEVICE WITH REFLECTORS IN INTER-ELECTRODE LOCATION

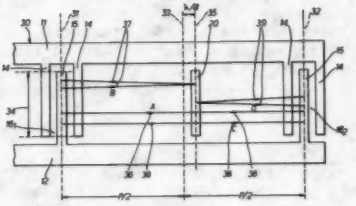
Meirion F. Lewis, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 12, 1984, Ser. No. 660,234

Claims priority, application United Kingdom, Oct. 14, 1983, 8327551

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—313 D **23 Claims**



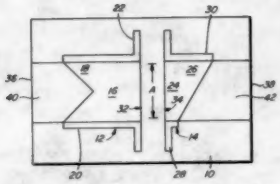
1. An acoustic transducer comprising a single layer metal conductor pattern on a substantially planar piezoelectric substrate, the pattern being arranged to define firstly a ladder transducer electrode configuration having rungs comprising transverse interdigital electrode fingers, and secondly at least one transverse reflector strip in an inter-rung position offset from spatial periodicity with the electrode fingers as appropriate to provide acoustic wave enhancement and reduction in respective mutually opposite directions in a given frequency band.

4,642,507

SAW DEVICES WITH REFLECTION-SUPPRESSING FINGERS

Mark S. Suthers, Lanark; Grantley O. Este, Stittsville; Richard W. Streater, and Blair K. MacLaurin, both of Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 1, 1985, Ser. No. 718,589
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—313 B 25 Claims



1. A SAW (surface acoustic wave) device comprising a substrate having an IDT (inter-digital transducer) on a surface thereof, the IDT comprising:

an active region of inter-digital fingers, for transducing a surface acoustic wave with a predetermined wavelength lambda for propagation on said surface via a front edge of the IDT with a predetermined aperture; and

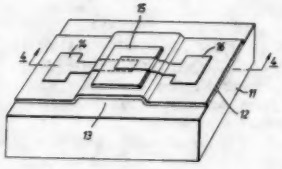
a reflection-suppressing region, having an aperture which is at least substantially as large as said predetermined aperture adjacent to the active region and comprising a plurality of of electrically interconnected fingers spaced apart with a pitch of lambda/4 and defining a tapered back edge of the IDT across at least part of said aperture.

4,642,508

PIEZOELECTRIC RESONATING DEVICE

Hitoshi Suzuki, Yokohama, and Hiroaki Sato, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Mar. 8, 1985, Ser. No. 709,600
Claims priority, application Japan, Mar. 9, 1984, 59-44122
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—321 17 Claims



1. A piezoelectric resonating device comprising:

a substrate having a substantially flat surface;

a non-piezoelectric film layer formed on said flat surface to create an air-gap between a portion of said non-piezoelectric film layer and said flat surface;

a first electrode formed on said non-piezoelectric film and extending along said air-gap;

a piezoelectric film layer formed on said non-piezoelectric film layer and said first electrode; and

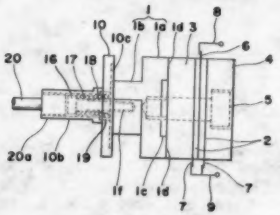
a second electrode formed on said piezoelectric film layer and extending along said air-gap.

4,642,509

ULTRASONIC MOTOR USING BENDING, LONGITUDINAL AND TORSIONAL VIBRATIONS

Akio Kumada, Kokubunji, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Filed Feb. 21, 1986, Ser. No. 831,578
Claims priority, application Japan, Apr. 19, 1985, 60-82668; Sep. 9, 1985, 60-197750; Sep. 9, 1985, 60-197751
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—323 10 Claims



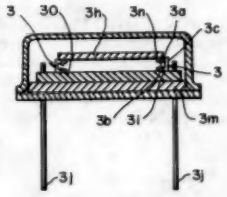
1. An ultrasonic motor comprising a stator including a bending vibration plate, a longitudinal and torsional vibration coupling element having a beam extending slanted relative to the vibration axis of the bending vibration plate, a piezoelectric thickness vibration element connected with the longitudinal and torsional vibration coupling element through an elastic vibration element, a longitudinal vibration element combined with the longitudinal and torsional vibration coupling element, the elastic vibration element and the piezoelectric thickness vibration element, said beam of the stator generating elliptical vibration which is combination of longitudinal vibration generated in the piezoelectric thickness vibration elements and then boosted in the elastic vibration element and torsional vibration generated in the longitudinal and torsional vibration coupling element excited by the longitudinal vibration and therefore having the same frequency of the vertical vibration, and a rotor which is contacted with the leg of the stator to receive the elliptical vibration to be rotated, wherein the improvement comprises surface contacting means for contacting with the beam of the stator only in the outer peripheral portion of the surface of the beam away from the torsional vibration axis and depressing means for applying a force to depress the contact surface means to said beam.

4,642,510

MOUNT FOR QUARTZ CRYSTAL OSCILLATOR DEVICE

Yukio Yamashita, Shiga, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 719,373, Apr. 3, 1985, abandoned. This application Jan. 31, 1986, Ser. No. 825,686
Claims priority, application Japan, Apr. 27, 1984, 59-63118[U]
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—348 12 Claims



1. A quartz crystal oscillator device including a quartz crys-

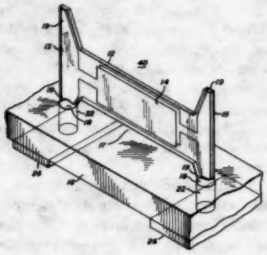
tal resonator supported on a base via a support member and hermetically sealed by a cap mounted on said base, said support member being characterized in that it comprises a pair of upper and lower planar connection sections, a vertical through section which is provided between a peripheral portion of one connection section and that of the other connection section for integrally connecting said connection sections, and plural pairs of bent legs vertically projected from peripheral portions of said connection sections other than said peripheral portion for the through section, with their distal ends left free.

4,642,511

EDGE-MOUNTING CONFIGURATION FOR AT-STRIP RESONATORS

Marc K. Chason, Schaumburg; Joseph P. Tomase, Libertyville, and Michael J. Onystok, Bloomingdale, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1986, Ser. No. 646,175
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—348 **33 Claims**



1. A piezoelectric resonator assembly comprising:

a quartz crystal blank of substantially rectangular shape having two opposing major surfaces, two opposing longitudinal edges, and conductive material disposed on each of said two opposing major surfaces to form electrodes;

base means for supporting said crystal blank, said base means having upper and lower surfaces; and

means for mounting said crystal blank to said base means by at least two separated mounting points adjacent to only a first of said two longitudinal edges such that said crystal blank opposing major surfaces are oriented substantially perpendicular to said base means upper surface, said mounting means including cavity means located within said base means upper surface for positioning said crystal blank on said base means.

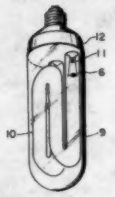
4,642,512

STAIN RESISTANT FLUORESCENT LAMP

Hiromitsu Matsuno, Hachioji; Seiichi Murayama, and Tetsuo Ono, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 1, 1984, Ser. No. 667,135
Claims priority, application Japan, Nov. 2, 1983, 58-204833
Int. Cl.[4] H01J *61/12, 61/34, 61/52*
U.S. Cl. 313—25 **8 Claims**

1. A fluorescent lamp comprising glass tube means for forming a discharge path between a pair of electrodes and provided with a phosphor layer on the inner wall thereof, a layer consisting of one of a metal oxide and a phosphate being provided between said inner wall of said glass tube means and said phosphor layer, and means for keeping to 80° C. or above the



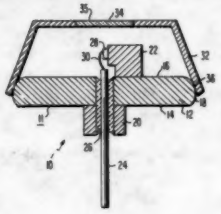
lowest temperature on the wall of said glass tube means along said discharge path to prevent stain from occuring.

4,642,513

ELECTROOPTIC ASSEMBLY HAVING AN ADJUSTABLE WINDOW

Paul Nyul, New Holland, Pa., and Rudolph H. Hedel, West Windsor, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 8, 1985, Ser. No. 699,557
Int. Cl.[4] H01J *5/02;* **H05B** *33/02*
U.S. Cl. 313—110 **6 Claims**



1. In an electrooptic assembly having an optical axis of symmetry comprising an electrooptic device mounted on a header and enclosed by a cover with a light transmissive window mounted therein, said header including a base plate having two major surfaces and a minor surface connecting the major surfaces;

the improvement wherein the minor surface is curved and a segment of the cover contacts the minor surface, so as to allow adjustments to be made to the window relative to the optical axis of symmetry.

4,642,514

AUTOMOBILE HEADLIGHT WITH COMBINED HEAT AND LIGHT SHIELD

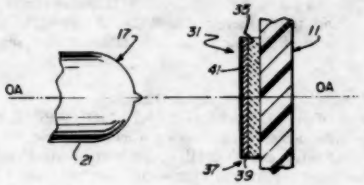
George J. English, Reading, and Kirti B. Chakrabarti, Danvers, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 28, 1984, Ser. No. 655,616
Int. Cl.[4] H01K *1/26*
U.S. Cl. 313—111 **12 Claims**

1. In an automobile headlight including a reflector, a plastic lens secured to said reflector, and a light source in the form of a capsule disposed within and substantially surrounded by said reflector, the improvement comprising:

means located on or forming part of a preselected portion of said plastic lens for preventing transmission of visible light through said preselected portion of said lens to reduce glare when said headlight is in operation in an automobile and for preventing heat buildup on said lens during said operation, said means located adjacent said capsule and preventing direct light from a portion of said capsule from passing through said lens, said means including a layer of heat insulating material located on an internal surface of

said lens relative to said capsule light source and means for absorbing visible light and reflecting heat upon receipt of



said visible light, said light absorbing and heat reflecting means located on said layer of heat insulating material.

4,642,515

COLOR CATHODE RAY TUBE IN-LINE ELECTRON GUN STRUCTURE INCORPORATING DEEP SADDLE ACCELERATING ELECTRODE

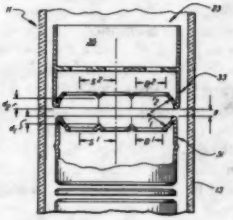
Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Dec. 12, 1984, Ser. No. 680,713

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.[4] H01J *29/62*

U.S. Cl. 313—414 **4 Claims**



1. In an in-line electron gun structure for a color cathode ray tube having an in-line plane, a lensing arrangement in the final focusing and accelerating electrodes comprising:

a first lensing structure in the forward portion of the focusing electrode, such structure having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having front beam exits and smaller dimensioned rear beam entrances, the front exits laying in a forward aperture plane and being generally circular and the entrances and exits separated by sloping sidewalls, a portion of the sidewall of each aperture intersecting a portion of an adjacent aperture to form an inwardly sloping arcuate wall along the region of intersection; and

a second lensing structure in the rear portion of the final accelerating electrode in adjacent, facing relationship with the first structure, such second structure having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having rear beam entrances and smaller dimensioned front beam exits, the rear entrances lying in a rearward aperture plane and being generally circular and the entrances and exits separated by sloping sidewalls, a portion of the sidewall of each aperture intersecting with a portion of the sidewall of an adjacent aperture to form an inwardly sloping arcuate wall along the region of intersection;

the axes of symmetry of said apertures in said first and second lensing structures lying substantially in the in-line plane;

characterized in that the apertures of the second lensing structure are enlarged, whereby the lensing field asymmetry caused by such enlargement substantially balances the lensing field asymmetry of the first lensing structure.

4,642,516

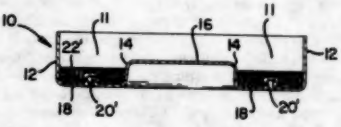
GETTER ASSEMBLY PROVIDING INCREASED GETTER YIELD

Thomas H. Ward, Bay Village; Phillip A. Costanzo, Parma; Vincent Pietrasz, Cleveland, and Edmund J. Soeder, Parma Hts., all of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 7, 1983, Ser. No. 539,795

Int. Cl.[4] H01J *29/94*

U.S. Cl. 313—481 **2 Claims**



1. A getter assembly comprising an annular channel defined by outer and inner sidewalls, and a bottom wall connecting said outer and inner sidewalls, and getter material pressed in said channel, said bottom wall having an integrally formed annular groove extending upwardly into said channel, said annular groove having a generally bulb shaped cross section which narrows down adjacent said bottom wall, said annular groove being covered by said getter material and interlocking therewith.

4,642,517

IMAGE DISPLAY APPARATUS WITH DEFORMABLE ACCELERATING ELECTRODES

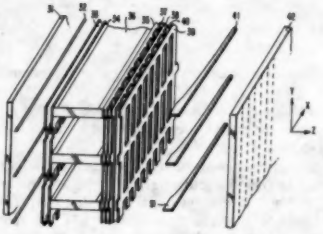
Takashi Kanehisa, Osaka, and Mitsunori Yokomakura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 27, 1984, Ser. No. 675,392

Claims priority, application Japan, Nov. 30, 1983, 58-225916

Int. Cl.[4] H01J *31/20, 63/02*

U.S. Cl. 313—495 **5 Claims**



1. An image display apparatus comprising: an elongated wire-like electron source; electron beam focusing and control electrodes positioned in front of said electron source for focusing and controlling electron beams emitted from said electron beam source; electron beam deflection electrodes positioned among said electron beam focusing and control electrodes for deflecting the electron beams; electron beam accelerating electrodes positioned in front of said electron beam focusing,

control, and deflection electrodes for accelerating said electron beams;

an electron beam light-emitting means having fluorescent material which emits red, green and blue light when struck by the electron beams; and

an evacuated enclosure enclosing said electron source and said electrodes and having a transparent screen adjacent said light-emitting means which is vertically divided into a plurality of sections and horizontally divided into a plurality of sections, said electrodes being operable to direct the electron beams to each section from said wire-like electron source and to vertically deflect an electron beam on each section to display a plurality of lines and to cause the fluorescent material to emit red, green and blue in each section in order, so that the quantity of irradiation of said electron beams on said fluorescent material is controlled; said electron beam accelerating electrodes being deformable and each having an elongated shape which has a side facing toward said electron beam deflection electrodes and a side facing away from said electron beam deflection electrodes for, when subjected to the Coulomb force due to voltages applied to said electrodes, being deformed to bring the side facing toward said electron beam deflection electrodes to a predetermined position of the beams in which the adverse effect on the image due to the deformation of said electron beam accelerating electrodes caused by the Coulomb force generated when each of said electrodes has a voltage applied thereto, is eliminated.

4,642,518

INSTALLATION OF ELECTRON BEAM METALWORKING

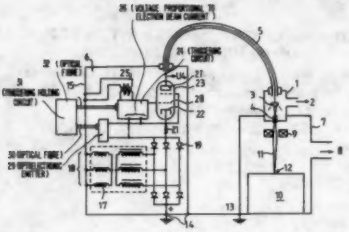
Philippe Dard, Boussy St Antoine, France, assignor to Sciaky S.A., Vitry sur Seine (Val de Marne), France

Filed Mar. 14, 1985, Ser. No. 711,911

Claims priority, application France, Mar. 23, 1984, 84 04559

Int. Cl.[4] H01J *23/34*

U.S. Cl. 315—1.0 **6 Claims**



1. Installation for working metal by electron beams comprising:

(a) an electron gun (1) having a cathode (3) that produces in a vacuum an electron beam (11) to be focused on a part (10) to be welded;

(b) a transformer and rectifier system including a transformer (17) and rectifier (19) for producing a rectified high voltage at terminals of the rectifier (19) connected to the secondary of the transformer (17), the rectifier (19) being connected to the cathode (3) of the electron gun by its negative terminal via a vacuum tube (28) and associated current-flow-sensitive means (21) and to the anode (4) of the electron gun by its earth, the reference potential, the vacuum tube (28) interrupting the passage of current to the electron gun when its intensity exceeds a determined value,

this installation being characterized in that;

(c) the current-flow-sensitive means are associated with the tube by means of a triggering circuit (24) having a threshold with a short time constant (47, 48, 49), the triggering circuit being connected to a control grid (22) of the vacuum tube (23) so as to block the same when the electron gun current exceeds the determined value and by means of a triggering holding circuit (31) that operates in cascade with the triggering circuit (24) to extend the blocking of the tube (23) for a time adjustable by adjusting means.

4,642,519

DIGITAL WAVE OBSERVATION APPARATUS

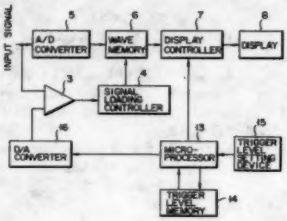
Kenji Nakatsugawa, Kanagawa; Aiichi Katayama, Isehara; Hitoshi Sekiya, and Shoji Hiratsuka, both of Atsugi, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Oct. 9, 1985, Ser. No. 786,223

Claims priority, application Japan, Oct. 15, 1984, 59-155229[U]

Int. Cl.[4] G01R *23/16;* **H01J** *23/34*

U.S. Cl. 315—1.0 **1 Claim**



1. A digital wave observation apparatus having an A/D converter for A/D converting an input signal, a trigger level setting device for setting a trigger level, a trigger signal generator for comparing the input signal with a set trigger level and generating a trigger signal, a wave memory for storing an A/D converted input signal in response to the trigger signal, and a display for displaying the input signal stored in said wave memory, comprising a trigger level display device for displaying a horizontal line corresponding to a trigger level on said display irrespective of generation of the trigger signal.

4,642,520

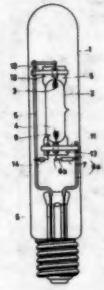
HIGH PRESSURE DISCHARGE LAMP

Anton J. Bouman, and Eise B. Geertsema, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,247

Int. Cl.[4] H01J *7/44, 17/34, 19/78, 29/96*

U.S. Cl. 315—73 **1 Claim**



1. A high-pressure discharge lamp which comprises: a sealed vacuum-tight light pervious lamp envelope, a sealed vacuum-

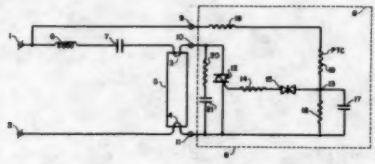
tight light-pervious discharge vessel disposed in said envelope, the space between said envelope and said vessel being evacuated or containing a non-oxidizing gas atmosphere, said lamp further including electrodes disposed in spaced relation from each other within said vessel, an ionizable fill disposed within said vessel, respective electrical current conductors extending through the wall of said envelope and through the wall of said discharge vessel to said electrodes and an oxidation-sensitive element connected electrically in series with said electrical current conductors and disposed in the space between said envelope and said vessel wherein the oxidation-sensitive element is a member substantially consisting of a material selected from the group consisting of zirconium-aluminium alloys, and sintered zirconium powder and sintered mixtures of zirconium powder and nickel powder.

4,642,521

COMPACT IGNITER FOR DISCHARGE LAMPS

Herman Smulders, Arlington Heights, Ill., assignor to Advance Transformer Company, Chicago, Ill.

Filed Dec. 21, 1984, Ser. No. 684,448
Int. Cl.[4] H05B *39/04*
U.S. Cl. 315—106 **13 Claims**



1. A ballast-igniter apparatus for an arc discharge lamp of the type having preheatable electrodes comprising:

a pair of input terminals for supplying an AC voltage to the apparatus,

a ballast impedance for connection in series with said discharge lamp across said input terminals,

a controlled semiconductor switching device having a control electrode,

means for connecting said controlled semiconductor device to the lamp electrodes so that the semiconductor device is connected in series with the ballast impedance and at least one lamp electrode so as to provide a preheat current path for said lamp electrodes,

means connecting a positive temperature coefficient (PTC) resistor in series with a timing capacitor across said input terminals, and

means including a semiconductor voltage threshold device for coupling the control electrode of the controlled semiconductor device to the timing capacitor so that the capacitor voltage controls the triggering of the controlled semiconductor device,

said PTC resistor being operative, prior to ignition of the lamp, to charge the timing capacitor from the voltage at said input terminals so as to trigger the controlled semiconductor device into conduction during each half cycle of the AC supply voltage to provide a preheat current for the lamp electrodes,

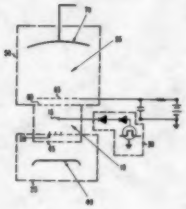
said PTC resistor changing over to a high resistance state after it heats up whereby the voltage developed across the timing capacitor in each half cycle of the AC voltage is insufficient to trigger the controlled semiconductor device into conduction when the lamp is in its operating state.

4,642,522

WIRE-ION-PLASMA ELECTRON GUN EMPLOYING AUXILIARY GRID

Robin J. Harvey, Thousand Oaks; Hayden E. Gallagher, Malibu, and Robert W. Schumacher, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 18, 1984, Ser. No. 621,420
Int. Cl.[4] H01J *7/24*
U.S. Cl. 315—111.31 **7 Claims**



1. An electron-ion plasma source, comprising:

an ionization chamber containing a gas;

an anode disposed in said ionization chamber for ionizing said gas upon application of an ionization potential thereto;

a cathode separated from said ionization chamber by a gap;

means for providing a high potential difference between said anode and said cathode such that ions are extracted from said chamber into said gap and accelerated through said potential difference to bombard said cathode, thereby producing electrons by secondary emission which are in turn accelerated through said potential difference to provide high energy electrons;

first grid means disposed between said ionization chamber and said gap;

second grid means disposed between said first grid means and said cathode in said gap; and

means for providing a potential to said second grid means, whereby upon interruption of said ionization potential to said anode, ions passing through said first grid means do not have sufficient kinetic energy to overcome the potential barrier of said second grid means and are thereby prevented from being accelerated through said potential difference.

4,642,523

PRECISION TUNABLE RESONANT MICROWAVE CAVITY

Shigeo Nakanishi, Berea; Frank S. Calco, Olmsted Falls, and August R. Scarpelli, Litchfield, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 11, 1985, Ser. No. 700,255
Int. Cl.[4] H01J *27/00*
U.S. Cl. 315—111.81 **8 Claims**

1. Apparatus for ions impressing microwave energy on an ionizable gas to produce a plasma which serves as a source of ions, said apparatus comprising:

a cylindrical metal chamber having first and second endwalls;

a capsule of ionizable vapor disposed in said first endwall;

a tuning wall slidably disposed in said chamber between said endwalls;

a plurality of threaded rods attached to said tuning wall and extending through said second endwall in threaded engagement with respective rotatable bushings in said second wall;

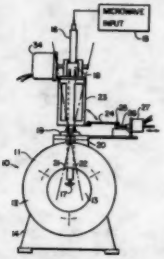
a plurality of gears with each gear carried on respective one

of each of said plurality of threaded rods and meshing with a common gear rotatably supported on said second endwall;

common gear driving means for rotating said common gear and, consequently, said rotatable bushings to position said tuning wall;

a spherical pivot joint disposed in the cylindrical wall of said cylindrical chamber;

a tube having one end retained in said spherical joint and extending outwardly from said chamber;



a coaxial probe having a coupling tip position in said chamber between said first endwall and said tuning wall and slidably extending through said tube for connection to a source of microwave energy;

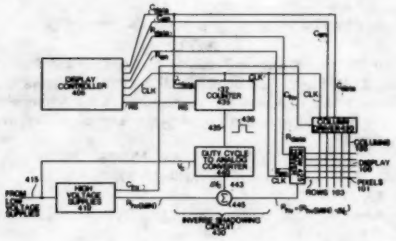
means for slidably positioning said coaxial probe in said tube whereby said coupling tip is moveable toward and away from the center axis of said cylindrical metal chamber, said tube being pivotable in said spherical pivot joint within an imaginary cone, the apex of which is at the center of the spherical joint thereby allowing positioning of said coupling tip at a desired location.

4,642,524

INVERSE SHADOWING IN ELECTROLUMINESCENT DISPLAYS

Bill Eaton, Albany, and Marvin L. Higgins, Corvallis, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 8, 1985, Ser. No. 689,621
Int. Cl.[4] G09G *3/10*
U.S. Cl. 315—169.3 **5 Claims**



1. A circuit for driving an electroluminescent (EL) display having picture elements (pixels) which emit light at and above a threshold voltage, said pixels arranged as an x-y matrix of columns and rows, said circuit comprising:

controller means for directing which pixels are to be lit;

constant voltage supply means for supplying constant column and constant row drive voltages;

a column driver circuit coupled between the constant voltage supply means and the columns of the EL display for selecting which columns of the EL display are to have lit pixels;

a row driver circuit coupled to the constant voltage supply means and the rows of the EL display for selecting which rows of the EL display are to have lit pixels; and

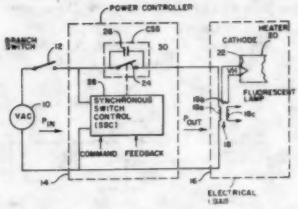
variable supply means coupled to the controller means and the row driver circuit for essentially maintaining the same slope of pixel writing voltage at and above for threshold voltage for pixels to be lit in a first selected row as the slope of pixel writing voltage at and above the threshold voltage for pixels to be lit in a subsequent selected row, independently of the number of pixels lit in the first and subsequent selected row.

4,642,525

TRANSIENT CONTROL CIRCUIT FOR FLUORESCENT LAMP SYSTEMS

Don F. Widmayer, 4704 Locust Hill Rd., Bethesda, Md. 20814

Filed Apr. 15, 1985, Ser. No. 723,184
Int. Cl.[4] H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—219 **4 Claims**



1. A system for controlling the A.C. power supplied from an A.C. source to an electrical load comprising at least one transformer ballast and at least one fluorescent lamp driven by said transformer ballast and incluing externally heated cathodes, said system including an electronic switch connected between the A.C. source and the load, a switching controller for controlling switching of said switch in timed relation to the A.C source voltage wave so as to control the power supplied to the load by applying to the switch control pulses the duration of which control the time during a cycle of the A.C. source voltage wave which the switch is turned on, and a capacitor connected in shunt across said switch, said switching controller including control means for, when the system is turned on, initially limiting the pulse duration of the control pulses applied to said switch and for thereafter gradually increasing the pulse duration of said control pulses over a plurality of cycles of the A.C. source voltage wave to thereby reduce the effect of the starting transient produced when the system is turned on and to gradually increase the lamp arc current from an initial minimum value to a value which produces the desired illumination level.

4,642,526

FLUORESCENT OBJECT RECOGNITION SYSTEM HAVING SELF-MODULATED LIGHT SOURCE

F. Kenneth Hopkins, Erlanger, Ky., assignor to Angstrom Robotics & Technologies, Inc., Florence, Ky.

Filed Sep. 14, 1984, Ser. No. 650,809
Int. Cl.[4] H05B *37/00*
U.S. Cl. 315—244 **17 Claims**

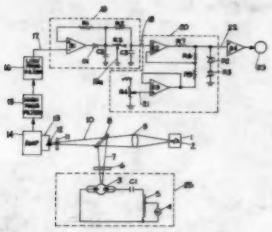
1. A circuit for producing self-modulation of the light intensity of a mercury vapor lamp comprising:

a transformer having primary and secondary windings;

a source of low frequency alternating voltage connected to said primary winding; and

a self-resonant circuit comprising the series connection of a copacitor and a mercury vapor lamp connected to said

secondary winding, said resonant circuit having a resonant frequency higher than and a non-integral multiple of



the frequency of said voltage source, wherein the light intensity of said lamp is caused to oscillate at the resonant frequency of said resonant circuit.

4,642,527

IN-LINE COLOR PICTURE TUBE APPARATUS WITH DYNAMIC CONVERGENCE CORRECTION DEVICE

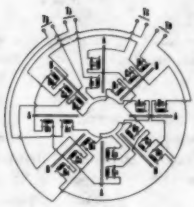
Koji Takahashi, and Machio Kawashima, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 372,328, Apr. 27, 1982. This application Jan. 16, 1986, Ser. No. 820,906

Claims priority, application Japan, Apr. 30, 1981, 56-63939

Int. Cl.⁴ H01J *29/70, 29/76*

U.S. Cl. 315—368 **4 Claims**



1. In an in-line color picture tube apparatus with an in-line color picture tube having a center beam between two side beams aligned in a plane, a self-convergence deflection yoke, a static convergence correction magnet assembly comprised of static convergence correction magnets and purity correction magnets, said yoke and said assembly being mounted on said tube, the improvement comprising dynamic convergence correction means disposed between said self-convergence deflection yoke and correction magnet assembly, said dynamic convergence correction means comprising a support member made of a non-magnetic substance, eight coil assemblies having cores fixedly disposed radially on said support member concentrically of the tube axis with mutually equal circumferential spacings, and coils wound on said cores, said coils being connected in such a manner as to generate a four-pole magnetic field having a horizontal axis which coincides with the in-line plane of the electron beams, a six-pole magnetic field having said horizontal axis, a four-pole magnetic field having an axis making an angle of 45° with respect to said horizontal axis, and a six-pole magnetic field having a vertical axis, each of the multi-pole magnetic fields producing displacement forces only on said side beams, said apparatus further comprising drive circuit means for feeding to said coils dynamic convergence correction signals of predetermined amplitude and direction at predetermined timings in accordance with the deflection synchronizing signals to achieve dynamic convergence correction over the scanned deflection field.

4,642,528

PICTURE CORRECTING APPARATUS FOR USE WITH IN-LINE TYPE COLOR PICTURE TUBE

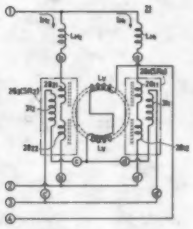
Toshio Kobayashi, Noda, and Hideo Hishiki, Iwai, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 12, 1984, Ser. No. 680,680

Claims priority, application Japan, Dec. 12, 1983, 58-234024

Int. Cl.⁴ H01J *29/70, 29/76*

U.S. Cl. 315—368 **7 Claims**



1. A picture correcting apparatus for use with an in-line type color picture tube of a self-convergence system, comprising:

(a) first and second horizontal deflecting coils;

(b) first and second vertical deflecting coils;

(c) a first saturable reactor having a first coil, a first core provided for said first coil, and at least one permanent magnet for magnetizing said first core in a given direction, said first coil being connected in series to said first horizontal deflecting coil so as to form a first series circuit;

(d) a second saturable reactor having a second coil, a second core provided for said second coil, and at least one permanent magnet for magnetizing said second core in a given direction, said second coil being connected in series to said second horizontal deflecting coil so as to form a second series circuit; said first and second series circuits being connected in parallel such that a parallel circuit of said first and second series circuits receives a horizontal deflection driving current;

said first and second saturable reactors being positioned diametrically with respect to a neck portion of said picture tube so as to receive leakage flux from said first and second vertical deflecting coils;

the winding directions of said first and second coils of said first and second saturable reactors and the polarity of said magnets of said first and second saturable reactors being selected such that the impedance of said first coil increases and decreases when the impedance of said second coil respectively decreases and increases in accordance with a degree of vertical deflection effected by said vertical deflecting coils; and

(e) means for causing a ratio $\theta e/\theta m$ to assume a value equal to or smaller than 0.5 so that an increasing rate of the amount of correction of the convergence of horizontal lines decreases as the degree of vertical deflection is increased where θm is a differential coefficient around the center of the picture where the degree of vertical deflection is very small and θe is a differential coefficient at top and bottom sides of the picture where the degree of vertical deflection is maximum, each of said differential coefficients corresponding to a changing rate of the inductance of said first and second coils of said saturable reactors.

4,642,529

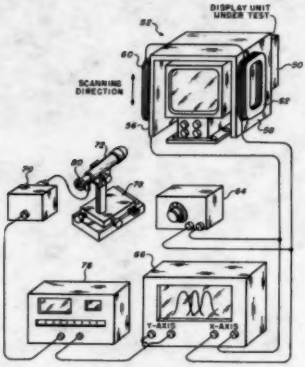
APPARATUS AND METHOD FOR MEASURING LINEWIDTH AND CONVERGENCE IN A COLOR CATHODE RAY TUBE DISPLAY SYSTEM

Cecil W. Penn, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 18, 1985, Ser. No. 713,127

Int. Cl.[4] H01J *29/70*; H04N *17/02, 9/24*

U.S. Cl. 315—368 **12 Claims**



1. Apparatus for measuring convergence in a cathode ray tube display system of the type including a generally planar viewing surface, comprised of a plurality of closely spaced adjacent independent regions of phosphorescent material at predetermined horizontal and vertical displacements, said tube having a plurality of independently driven electron beams adapted to be controlled by beam deflection signals so as to converge on a first plurality of said regions along a first axis whereby said regions are sequentially illuminated, comprising:

magnetic deflection means, positioned on said display system and coupled to said electron beams, independent of said beam deflection signals, for producing a magnetic field inductively cooperating with said electron beams so as to provide a deflection of said electron beams along a second axis coplanar with said viewing surface whereby said beams are caused to traverse said regions along said second axis;

function generator means coupled to provide a cyclical control signal for energizing said magnetic deflection means;

photo-responsive detector means for sensing luminescent radiation from said viewing surface and adapted for focusing on an essentially centrally disposed area of one of said regions along said first axis,

traverse means for carrying said photo-responsive detector means and displacing said means by at least one of said predetermined horizontal and vertical displacements to focus on an area of a further one of said regions along at least one of said first and second axes and

display means, coupled to respond to said cyclical function generator means and said photo-responsive detector means, for providing an output signal indicative of relative brightness of said one region and said further one of said regions as a function of beam deflection.

4,642,530

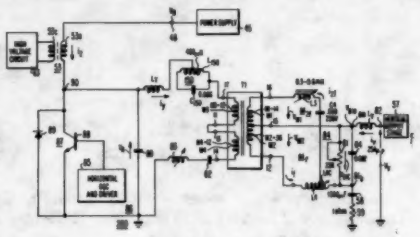
RASTER DISTORTION CORRECTION CIRCUIT

Enrique Rodriguez-Cavazos, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed May 10, 1985, Ser. No. 732,693

Int. Cl.[4] H01J *29/56*

U.S. Cl. 315—371 **13 Claims**



1. In a cathode ray tube scanning system including a deflection yoke having a respective horizontal and vertical deflection windings, a source of horizontal scanning current at a horizontal scanning frequency, a source of vertical scanning current at a vertical scanning frequency, and first means for coupling said yoke to said first and second sources in such manner that said horizontal scanning current is caused to traverse said horizontal deflection winding and said vertical scanning current is caused to traverse said vertical deflection winding, raster distortion correction apparatus comprising:

a nonlinear reactor including a first winding responsive to a signal at a first frequency that is related to said horizontal scanning frequency for generating in a second winding of said reactor an output signal at a frequency that is related to said first frequency;

means coupled to said second winding of said nonlinear reactor and responsive to said output signal for producing a first modulating current that is predominantly at a harmonic which is greater than said first frequency;

means responsive to a signal operating at a frequency that is related to said vertical scanning frequency and coupled to said first modulating current producing means for varying the amplitude of said first modulating current in accordance therewith; and

means coupled to said vertical deflection winding for modulating the vertical scanning current in accordance with said first modulating current.

4,642,531

TIMEBASE CIRCUIT

David T. Jobling, Geneva, and Anthony D. Newton, Le Vaud, both of Switzerland, assignors to Motorola Inc., Schaumburg, Ill.

Filed May 31, 1985, Ser. No. 739,949

Claims priority, application United Kingdom, Jun. 5, 1984, 8414316

Int. Cl.[4] H01J *29/56*

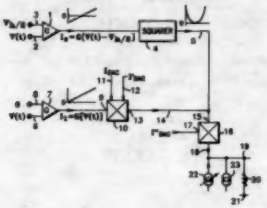
U.S. Cl. 315—371 **11 Claims**

1. A timebase circuit for providing a horizontal drive correction waveform for a television type display, the circuit comprising;

first means responsive to a vertical ramp signal for providing a current proportional thereto;

second means for squaring said current to provide a parabolic current;

third means responsive to said vertical ramp signal for providing a linear current proportional thereto; and



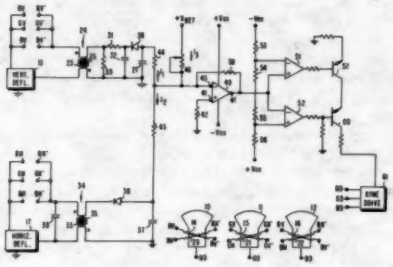
fourth means for combining said parabolic and linear currents to provide a tilted parabolic current.

4,642,532

PROJECTION TV DEFLECTION LOSS PROTECTION CIRCUIT

Alan A. Hoover, New Palestine, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed May 10, 1984, Ser. No. 609,413
Int. Cl.[4] H01J *29/52*
U.S. Cl. 315—386 **1 Claim**



1. A protection circuit for a video display apparatus having a cathode ray tube with a deflection yoke mounted thereon, said protection circuit comprising:

means coupled to said deflection yoke for providing a first current having an amplitude indicative of line rate deflection current through said deflection yoke;

means coupled to said deflection yoke for providing a second current having an amplitude indicative of field rate deflection current through said deflection yoke,

current summing means for combining said first and said second currents with a reference current to form a balanced current sum signal, said reference current selected such that the amplitude of said balanced current sum signal is substantially zero as an indication of normal line and field rate deflection current in said deflection yoke and nonzero as an indication of abnormal line or field rate deflection current in said deflection yoke;

comparator means having an input terminal coupled to said balanced current sum signal providing means, said comparator responsive to said balanced current sum signal for providing a nonzero output signal as an indication of abnormal line or field rate deflection current; and

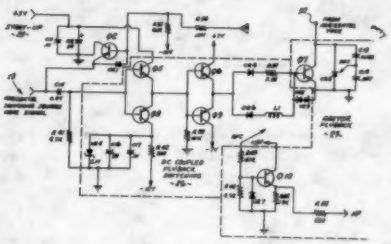
means responsive to said nonzero comparator output signal for providing a disabling signal for said video display apparatus.

4,642,533

CONSTANT CURRENT POWER CIRCUIT FOR HORIZONTAL DEFLECTION OF CATHODE RAY TUBE

John C. Carpenter, Reseda, Calif., assignor to Ocean Technology, Inc., Burbank, Calif.

Filed Mar. 27, 1985, Ser. No. 716,814
Int. Cl.[4] H01J *29/70*
U.S. Cl. 315—408 **14 Claims**



1. In a control circuit for the horizontal magnetic deflection yoke of a cathode ray tube, the combination of:

first and second terminals for connection to said yoke;

a first transistor having emitter, collector and base electrodes;

a current sensing resistor connected in a series circuit with said first transistor emitter and collector electrodes at a first junction point, with one end of said series circuit connected to a DC power source and with the other end directly connected to said yoke first terminal;

a S shaping capacitor connected between said yoke first terminal and circuit ground;

an operational amplifier having first and second inputs and an output, with said output connected to said first transistor base electrode in controlling relation and with a reference voltage connected to said first input;

first circuit means for connecting said first junction point to said operational amplifier second input;

second circuit means for connecting a current control signal to said operational amplifier second input;

a second transistor having emitter, collector and base electrodes, with said emitter and collector electrodes directly connected between said yoke second terminal and circuit ground;

a flyback capacitor connected across said second transistor emitter and collector electrodes;

a diode connected across said second transistor emitter and collector electrodes for providing a conduction path during the first half of the sweep sawtooth current waveform;

a third transistor connected as an amplifier between said operational amplifier output and said first transistor base electrode; and

third circuit means for connecting a horizontal switching signal to said second transistor base electrode in controlling relation.

4,642,534

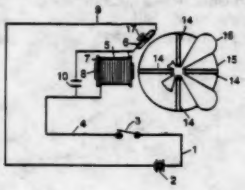
MAGNETIC DRIVEN MOTOR

Emile Mitchell, 3315 Dragonwick, Houston, Tex. 77030

Filed Jul. 15, 1985, Ser. No. 754,974
Int. Cl.[4] H02P *6/02*
U.S. Cl. 318—138 **7 Claims**

1. A brushless DC motor comprising a source of electrical energy a first conductor leading therefrom to a coil, a rotor having magnets and cooperating with said coil, a glass enclosed switch adjacent said rotor, a second conductor connected to said coil and to said source of electrical energy through said glass enclosed switch creating a closed electrical circuit, said glass enclosed switch having magnetized contact points and gap, the poles of said magnetized contact points

adapted to be attracted or repelled by said rotor magnets to control the rotation of said rotor, an adjustable magnet



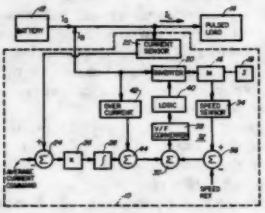
mounted adjacent said switch to alter the gap of said magnetized contact points to control the speed and direction of said rotor.

4,642,535

ELECTROMAGNETIC ENERGY STORAGE AND SUPPLY SYSTEM

David J. Hucker, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 29, 1983, Ser. No. 566,518
Int. Cl.[4] H02K 7/02
U.S. Cl. 318—161 **4 Claims**



1. In a system having a main power supply for providing D.C. current to a pulsed load with on and off periods, improved means for supplementing the main power supply comprising:

means for sensing the load current;

means for comparing the sensed load current to an average current command to provide a difference signal proportional to a desired supplemental current to be provided to the load;

a motor;

means for sensing the speed of the motor to provide a signal representative thereof;

means for comparing the motor speed signal to a reference speed signal to provide an output signal representing the difference therebetween;

an inertia device coupled to the motor for storing and discharging energy;

means for combining the difference signal with the output signal from the comparing means representing the difference between the motor speed and the reference speed to provide a speed command signal; and

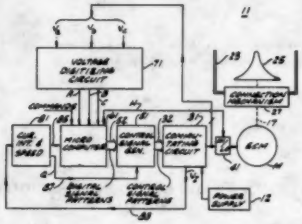
an inverter coupled between said main power supply and said motor and controlled in response to said speed command signal to provide an A.C. voltage to the motor to drive the inertia device during the off period of the pulse load, the inertial device, when driven by the motor, being accelerated to store energy from the main power supply, said inertia device decelerating during the on period of the pulse load to discharge energy through said motor and inverter and provide a D.C. current to the load to supplement the main power supply.

4,642,536

CONTROL SYSTEM FOR AN ELECTRONICALLY COMMUTATED MOTOR, METHOD OF CONTROLLING SUCH, METHOD OF CONTROLLING AN ELECTRONICALLY COMMUTATED MOTOR AND LAUNDRY APPARATUS

John H. Boyd, Jr., and Alexander Muller, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 602,163, Apr. 19, 1984, Pat. No. 4,540,921. This application Mar. 12, 1985, Ser. No. 710,900
Int. Cl.[4] H02P 6/02
U.S. Cl. 318—254 **101 Claims**



1. A control system for an electronically commutated motor including a stationary assembly having a plurality of winding stages adapted to be selectively commutated, and rotatable means associated with the stationary assembly in selective magnetic coupling relation with the winding stages, and means for commutating the winding stages by selectively supplying power thereto in response to a pattern of control signals leaving at least one of the winding stages unpowered at any one time while the other winding stages are powered, the control system comprising:

means coupled to the winding stages for simultaneously converting the voltages across the winding stages to digital form thereby to digitize the voltages;

means for producing successive patterns of digital signals in at least one preselected sequence, for selecting the digitized voltage across the at least one unpowered winding stage depending on the digital signal pattern produced, and for producing a following pattern in sequence after at least one predetermined logic level of the selected digitized voltage has occurred; and

means responsive to the successive patterns of the digital signals for generating the successive patterns of the control signals for the commutating means.

4,642,537

LAUNDERING APPARATUS

Glen C. Young, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

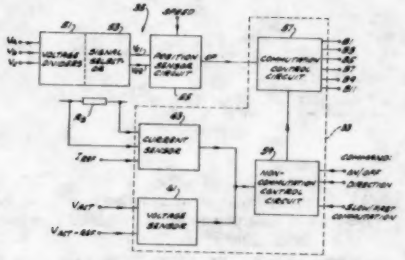
Filed Dec. 13, 1983, Ser. No. 561,047
Int. Cl.[4] H02P 6/02
U.S. Cl. 318—254 **89 Claims**

1. A control system for an electronically commutated motor adapted to be energized from a DC power source and including a stationary assembly having a plurality of winding stages adapted to be electronically commutated in at least one preselected sequence, and a rotatable assembly associated in selective magnetic coupling relation with the winding stages, each winding stage having a terminal associated therewith, the control system comprising:

first means operable for electronic and energization commutation of at least one at a time of the winding stages of the electronically commutated motor by applying thereto a DC voltage from the power source in the at least one preselected sequence to effect the energization of the electronically commutated motor and the rotation of the

rotatable assembly, at least one unenergized other of the winding stages during any one commutation exhibiting a terminal voltage including a back emf and a field collapse voltage ending prior to appearance of the back emf; and

second means for receiving and integrating the terminal voltage in response to its first approach to zero at the ending of the field collapse voltage and effecting the operation of said electronic commutation means when a predetermined level is reached in the integrating.



42. A method of controlling the average voltage cyclically applied to a load, comprising the steps of:

generating a direct function of the applied voltage;

terminating application of voltage to the load when the function of the applied voltage reaches a first predetermined value selected to represent a desired average voltage; and

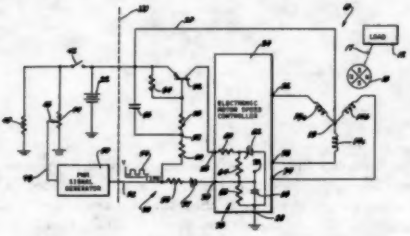
terminating each voltage cycle when the function of the applied voltage reaches a second predetermined value.

4,642,538

ELECTRIC MOTOR SPEED CONTROLLER SUPPLY CIRCUIT FOR A MOTOR VEHICLE

James O. Elliott, Beavercreek, and Dennis J. Ricker, Huber Heights, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 31, 1986, Ser. No. 825,608
Int. Cl.[4] H02P *1/00*
U.S. Cl. 318—139 **2 Claims**



1. In a motor vehicle electrical system having a storage battery, an electric motor for operating a vehicular load, a control device for providing a pulsed desired speed signal having a duty cycle which varies in relation to the desired motor speed, and an electronic controller adapted to receive battery current from the storage battery for controlling the motor in accordance with the desired speed signal, an electric supply system for connecting the storage battery and the electronic controller, comprising:

electronic switch means having a load current carrying circuit connected directly between the storage battery and the electronic controller to define a path by which battery current may be drawn by the controller, and a control terminal for electrically biasing the switch means to a first state wherein the controller is free to draw battery current through said load current carrying circuit without substantial restriction or a second state wherein substantially no battery current can be drawn through the load current carrying circuit; and

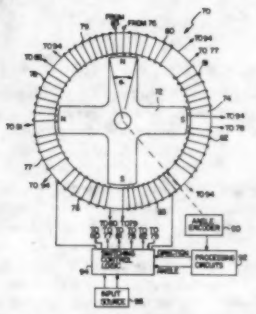
biasing means connected to the control terminal of the electronic switch means for biasing the switch means between said first and second states according to the desired speed signal such that the switch means is biased to the first state to permit the draw of battery current by the electronic controller when the motor speed command signal corresponds to a non-zero desired motor speed indication, and to the second state to prevent substantial draw of battery current by the electronic controller when the motor speed command signal corresponds to a zero desired motor speed indication, the biasing means further including energy storage means connected to the control terminal of the electronic switch means and activated when the duty cycle of the motor speed command signal corresponds to a non-zero desired motor speed for maintaining the electronic switch means biased to said first state, thereby to permit continuous draw of battery current by the electronic controller between the pulses of said motor speed signal.

4,642,539

TORQUE MOTOR WITH UNLIMITED ANGULAR EXCURSION

Walter E. Hinds, Beverly Hills, Calif., assignor to Northern Magnetics, Inc., Van Nuys, Calif.

Filed Jun. 10, 1985, Ser. No. 742,931
Int. Cl.[4] H02K *29/10*
U.S. Cl. 318—439 **14 Claims**



11. A brushless bidirectional DC torque motor drive having an essentially unlimited excursion range within which the motor can be angularly positioned and a high level of uniform torque for an applied driving current, comprising:

a magnetic rotor including a shaft rotatable about a central axis, the rotor having at least two pole tips, oppositely and permanently magnetized, extending radially from the central axis and each covering a predetermined arc about the central axis;

a magnetic ring core concentric with the central axis and disposed adjacent the rotor with a uniform gap from the pole tips;

a set of helical windings wound about the ring core with lengths of winding adjacent the pole tips and transverse to the direction of movement of the pole tips in rotation of the rotor, each set of windings being disposed along an arc segment at least equal to the arc of the pole tips; and

means coupled to the windings and providing a driving current of selectable amplitude and including switching means responsive to the angular position of the core to

energize the windings in different patterns in relation to the desired amplitude and direction of torque to be exerted and in relation to the angular position of the rotor relative to the ring core, such that a substantially uniform interaction force is exerted on the pole tips and rotor due to current in the lengths of windings regardless of the position of the rotor.

4,642,540

ROBOT CONTROL SYSTEMS

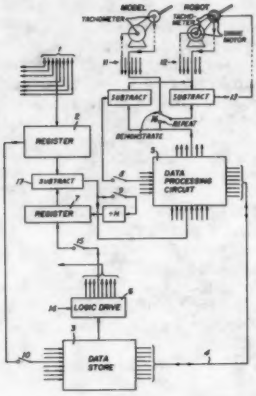
Christopher A. G. LeMay, Osterley, England, assignor to EMI Limited, Hayes, England

Filed Nov. 2, 1983, Ser. No. 547,966

Claims priority, application United Kingdom, Nov. 4, 1982, 8231553

Int. Cl.[4] G05B *19/10*

U.S. Cl. 318—568 **5 Claims**



1. A system for controlling a robot, the system comprising means for generating, in a teaching mode, respective data signals related to successive intended positions of a part of the robot as established by demonstration of a desired job sequence,

means for generating, in the teaching mode, corresponding tachometer signals related to drive signals effective to position said part successively at said intended positions, and

processing means for generating respective transformation signals for translating each said data signal into a corresponding said tachometer signal, and being operable, in a working mode, to apply said transformation signals successively to respective data signals generated during a repeat of the desired job sequence thereby to generate corresponding tachometer signals, and wherein means are provided to compare the tachometer signals generated by said processing means, in the working mode, with tachometer signals produced by the robot, in the working mode, and to servo said part into said intended positions, in accordance with the desired job sequence, in dependence on the comparision.

4,642,541

TRACK FOLLOWING SERVO FOR HIGHER DENSITY DISK FILES

Ashraf I. El-Sadi, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

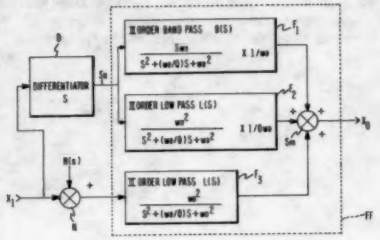
Filed Oct. 20, 1983, Ser. No. 543,688

Int. Cl.[4] G05B *5/01*

U.S. Cl. 318—616 **13 Claims**

1. In a track-following servo arrangement for high-density disk files, position-error determining means operating according to a "second order summing filter" array;

wherein motor current sense voltage V_I is integrated and processed, by "second order band-pass" filter means F_a and also by "second order low pass" filter means F_b;



while a complex position error signal voltage V_{xi} including a mechanical noise component is processed by a "second order low pass" filter means F_c;

whereupon the three filter means outputs are summed by summing means to generate an improved head-position-error value as position-error voltage, V_{xo}, relatively free of noise.

4,642,542

VELOCITY CONTROL SYSTEMS

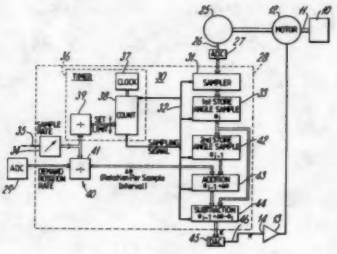
Alexander W. McKeand, Edinburgh, Scotland, assignor to Ferranti plc, Cheshire, England

Filed Nov. 8, 1985, Ser. No. 796,242

Claims priority, application United Kingdom, Nov. 9, 1984, 8428418

Int. Cl.[4] G05B *21/02*

U.S. Cl. 318—636 **6 Claims**



1. A motor velocity control arrangement comprising a motor coupled to a driven member, motor drive means arranged to supply current to the motor at a level related to the value of an error signal applied thereto, transducer means operable to produce signals representative of the instantaneous position of the driven member or motor and digital processing means including input means operable to receive the value of the demanded velocity, sampling means operable to sample the transducer signals to determine the instantaneous position of the driven member at predetermined sampling intervals, displacement means responsive to the value of demanded velocity and sampling rate to determine the demanded change in body position in the sampling interval, said digital processing means being operable to compare the magnitudes of successive adjacent instantaneous position samples, one of which is modified by the demanded change in body position, to derive from the comparison a positional error signal representing the position error between the instantaneous position and that demanded

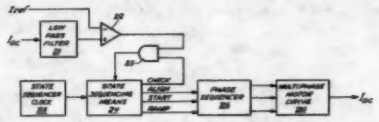
by motion at said demanded velocity and to apply said error signal to the motor drive means.

4,642,543

STARTING SEQUENCE FOR RELUCTANCE MOTOR DRIVES OPERATING WITHOUT A SHAFT POSITION SENSOR

Stephen R. MacMinn, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 9, 1985, Ser. No. 806,902
Int. Cl.[4] H02P *8/00*
U.S. Cl. 318—696 **11 Claims**



1. A controller for a multiphase motor comprising:

current sensing means adapted to be coupled to said motor for providing an indicating signal when the average total current flowing in said motor exceeds a predetermined value;

state sequencing means coupled to said current sensing means for generating a sequence of starting signals, said sequence comprising an align signal, a check signal and a ramp signal, said check signal following a predetermined starting delay after the end of said align signal, said ramp signal following said check signal if said indicating signal is absent during said check signal, said align signal following said check signal if said indicating signal is present during said check signal; and

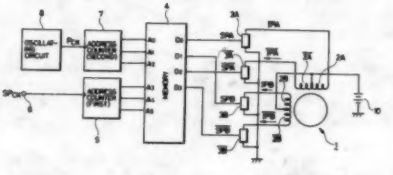
phase sequencing means coupled to said state sequencing means and adapted to be coupled to said motor for energizing a predetermined stator phase of said motor in response to said align signal, for stepping the stator phases of said motor at a predetermined frequency during said starting delay and during said check signal, and for increasing the stepping rate of said stator phases from said predetermined frequency to a desired running frequency in response to said ramp signal.

4,642,544

CONTROL CIRCUIT FOR DRIVING STEP MOTOR

Takashi Furumura, and Takeo Ohba, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1985, Ser. No. 763,244
Claims priority, application Japan, Aug. 11, 1984, 59-168157
Int. Cl.[4] H02P *8/00*
U.S. Cl. 318—696 **2 Claims**



1. A control circuit for driving. in response to step driving pulses, a step motor with at least first and second phase coils each having corresponding phase control elements, said control circuit comprising:

memory means for storing phase switching data to control said phase control elements and having a plurality of output terminals adapted to be connected to said phase control elements for supplying phase switching signals to said phase control elements and first and second sets of input terminals for receiving data addresses;

a first address counter having output terminals connected to said first set of terminals for successively supplying phase switching data addresses to said memory means in response to said step driving pulses and an input terminal adapted for receiving said step driving pulses;

a second address counter having output terminals connected to said second set of terminals for successively supplying data addresses to said memory means to determine the on/off status of said phase switching data and an input terminal for receiving clock pulses; and

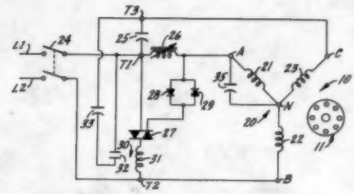
pulse generating means connected to said input of said second counter for supplying clock pulses at a frequency greater than the frequency of said step driving pulses.

4,642,545

STATIC PHASE CONVERSION CIRCUITS FOR THREE-PHASE MOTORS

Alexander J. Lewus, 9844 N. 11th Ave., Phoenix, Ariz. 85021

Filed Sep. 13, 1985, Ser. No. 775,811
Int. Cl.[4] H02P *1/44*
U.S. Cl. 318—749 **15 Claims**



1. A phase conversion circuit for energizing a three-phase A.C. motor from a single-phase A.C. power line, comprising:

a three-phase motor comprising a rotor, a stator including three individual stator windings with each winding electrically displaced from the others by 120°, and three power input terminals T1, T2 and T3 each connected to at least one of the stator windings;

power input means for connecting a single-phase A.C. line directly to the power input terminals T1 and T2, with no direct line connection to the power input terminal T3;

a main dephasing capacitor coupling power input terminal T1 to power input terminal T3; and

a reactive phase correction impedance connected in parallel with only one stator winding, that one stator winding being a winding that is connected to the power input terminal T3.

4,642,546

METHOD AND APPARATUS FOR OPERATING A LOAD SUPPLIED VIA AN INTERMEDIATE-LINK CONVERTER, ESPECIALLY AN ASYNCHRONOUS MACHINE, IN THE EVENT OF A NETWORK DISTURBANCE

Andreas Schönherr, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

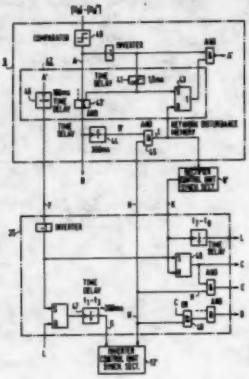
Filed Nov. 16, 1984, Ser. No. 671,906
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1983, 3341952
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—798 **14 Claims**

1. A method for operating an asynchronous machine coupled to an a-c supply network via an intermediate link converter in the event of a disturbance of the supply network, the converter comprising rectifier means coupled to the supply network, inverter means coupled to the asynchronous machine, said converter fired in a normal commutation cycle

when there is no disturbance of the network, the inverter means and rectifier means being coupled by an intermediate d-c link, the method comprising the steps of:

inhibiting the normal commutation cycle of said converter until the current in the intermediate d-c link has decayed by inhibiting normal firing of controlled rectifiers of the rectifier means and normal firing of controlled rectifiers of said inverter means;

during the disturbance, resuming the commutation cycle of said inverter means, firing two series connected controlled rectifiers of the rectifier means coupled across the inter-



mediate d-c link so that the asynchronous machine current is again able to flow through the intermediate d-c link and said two series-connected controlled rectifiers of the rectifier means, the frequency of the commutation cycle being slaved to a measured value of the machine frequency such that the machine current assumes a value required for maintaining a desired flux in said asynchronous machine; and

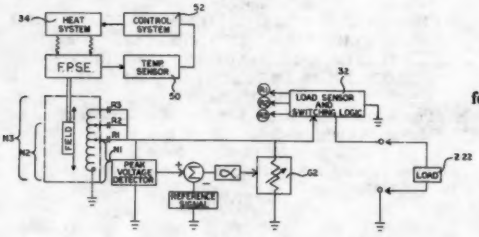
after the end of the disturbance coupling said rectifier means synchronously to the network and resuming the normal commutation cycle of the rectifier means.

4,642,547

ADAPTIVE REGULATION SYSTEM FOR A LINEAR ALTERNATOR DRIVEN BY A FREE-PISTON STIRLING ENGINE

Robert W. Redlich, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Aug. 19, 1985, Ser. No. 766,491
Int. Cl.[4] H02P *9/04;* **H02K** *35/00;* **F02B** *71/00*
U.S. Cl. 322—3 **11 Claims**



1. An adaptive load regulator for a linear alternator driven by a free piston Stirling engine, having a heat energy source, the alternator having an armature circuit and a useful load connected to the armature circuit, and further including a stepped armature system for controlling the stroke amplitude of the Stirling engine, the regulator and the stepped armature system comprising:

(a) a controllably variable conductance shunted across the armature;

(b) a negative feedback control circuit comprising:

(i) a summing circuit;

(ii) a voltage detector means connected to the armature circuit for detecting a signal which is proportional to the alternator output voltage and connected to apply the detected signal to an input of the summing circuit;

(iii) a reference signal source connected to apply its reference signal to another input of the summing circuit; and

(iv) an amplifier having its input connected to the output of the summing circuit and its output connected to the control input of the controllable, variable conductance for applying a signal which is proportional to the difference of the input signals at the summing circuit to a control input of the variable conductance for varying the conductance in proportion to detected voltage changes;

(c) an armature coil divided into a plurality of coils serially connected by one or more taps;

(d) circuit means having an input connected to the useful load for detecting the steady state output power demand of the useful load; and

(e) logic switching means having a control input connected to the output of the power demand detecting means and having its switches connected to the taps of the armature and to the useful load for connecting a selected one of said taps as the armature output to the useful load to provide an effective total number of armature coil turns in inverse proportion to the square root of a selected, discrete total armature power output above the detected steady state power demand of the useful load;

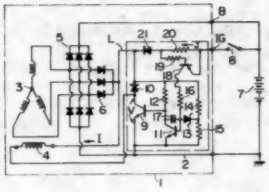
whereby the stroke is changed to discrete stroke amplitudes in approximate inverse proportion to the square root of the useful load power demand.

4,642,548

CONTROL APPARATUS FOR CHARGING GENERATOR

Keiichi Mashino, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,379
Claims priority, application Japan, Jul. 25, 1984, 59-153115
Int. Cl.[4] H02P *9/00*
U.S. Cl. 322—25 **3 Claims**



1. A control apparatus for controlling a charging generator for an automobile, comprising:

armature windings across which an alternating current output voltage is generated in response to rotation of the armature;

rectifier circuit means connected to said armature windings for rectifying the alternating current output voltage;

battery means for supplying electric energy and being charged by the rectified output of said armature windings through said rectifier circuit means;

a field winding for providing a magnetic field for said armature windings;

semiconductor switching means connected in series to said field winding for intermittently interrupting an exciting current supplied to said field winding;

voltage regulation means for sensing the rectified output voltage of said armature windings charging said battery means and for controlling the exciting current supplied to said field winding through said semiconductor switching means;

means for detecting the amplitude of the exciting current supplied from said battery means to said field winding at least until said generator enables a charging operation;

means for comparing the detected amplitude of the exciting current with a predetermined level and for controlling an on-off operation of said semiconductor means so as to suppress the initial exciting current to a level no more than the predetermined level which predetermined level is sufficient to enable the charging operation by said generator.

4,642,549

FERRORESONANT CONSTANT AC VOLTAGE REGULATOR

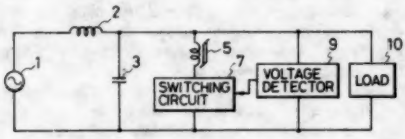
Kosuke Harada, Fukuoka; Katsuaki Murata, Kumamoto, and Takazi Nakamizo, Fukuoka, all of Japan, assignors to Nishimu Electronics Industries Co., Ltd., Japan

Filed Aug. 12, 1985, Ser. No. 764,499

Claims priority, application Japan, Aug. 23, 1984, 59-176441

Int. Cl.[4] H02J 3/18

U.S. Cl. 323—210 **15 Claims**



1. A ferroresonant constant AC voltage regular comprising:

a linear reactor and a capacitor connected in series to an AC power source,

a series connected circuit comprising a saturable reactor means and a switching circuit connected in parallel to said capacitor,

a voltage detector for detecting an output voltage appearing across asid capacitor, and

means for controlling on-off state of said switching circuit in response to the output voltage detected by said voltage detector,

and said regulator being controlled in such that the higher said detected output voltage is, the longer the time during which said switching circuit is in its on-state, and the larger the average lagging current which flows through said saturable reactor means.

4,642,550

SELF-OSCILLATING SWITCHING REGULATOR HAVING REAL-TIME CURRENT ADJUSTMENT CONTROL

Vincent A. Illuzzi, Staten Island, N.Y.; Walter G. Kutzavitch, Freehold, and Allen J. Rooney, III, Madison, both of N.J., assignors to American Telephone and Telegraph Company and AT&T Information Systems, Inc., both of Morristown, N.J.

Filed Mar. 18, 1985, Ser. No. 712,637

Int. Cl.[4] G05F 1/60

U.S. Cl. 323—222 **5 Claims**

1. A self-oscillating switching voltage regulator comprising

an input,

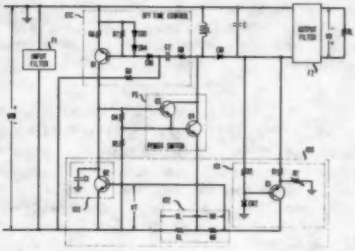
an output,

an inductor,

a control circuit for switching said inductor across said input when a control voltage does not exceed a predetermined threshold voltage and for switching said inductor across said output when said control voltage exceeds said predetermined threshold voltage,

a control voltage circuit for generating said control voltage by summing a prdetermined percentage of an output voltage to a voltage dependent on the magnitude of inductor current when said inductor is connected across said input, said control voltage circuit including

a resistor serially connected to a switching device which together are serially connected to said inductor, said resistor generating said inductor current dependent voltage,



a second resistor having one end connected to an output voltage amplifier and a second end connected in series with said resistor at the connection of said resistor to said switching device, said voltage amplifier generating said predetermined percentage of said putput voltage across said series connection of said resistor and said second resistor, and

wherein said control voltage is generated across said series connection of said resistor and said second resistor.

4,642,551

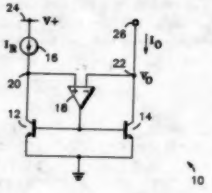
CURRENT TO VOLTAGE CONVERTER CIRCUIT

Ira Miller, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 22, 1985, Ser. No. 790,026

Int. Cl.[4] G05F 3/20

U.S. Cl. 323—314 **8 Claims**



1. A current to voltage conversion circuit, comprising:

current mirror means for sinking a current at an output of a predetermined magnitude when said current mirror means is a quiescent balanced operating state, the value of said current being caused to vary in response to said current mirror means receiving a current input supplied at an input thereof which causes the operation thereof to become unbalanced;

feedback amplifier means responsive to said current mirror means for providing current feedback at an output thereof to force the operation of said current mirror means to a balanced operating condition such that an output voltage is established at said output the magnitude of which varies as a function of said current input; and

said current mirror means including:

(a) differential amplifier means having first and second in-

puts and an output, said first input being coupled to said output of said current mirror means;

(b) current supply means for sourcing currents to said first and second inputs of said differential amplifier means;

(c) a first transistor having first, second and control electrodes, said first electrode being coupled to said input of said current mirror means, said second electrode being coupled to said output of said current mirror means and said control electrode being coupled to said output of said differential amplifier means; and

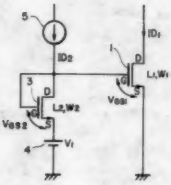
(d) a second transistor having first, second and control electrodes, said first electrode being coupled to said output of said feedback amplifier means, said second electrode being coupled to said second input of said differential amplifier means and said control electrode being coupled to said output of said differential amplifier means.

4,642,552

STABILIZED CURRENT SOURCE CIRCUIT

Toshiro Suzuki, Tama, and Osamu Matsubara, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1986, Ser. No. 827,612
Claims priority, application Japan, Mar. 4, 1985, 60-41325
Int. Cl.[4] G05F *3/26*
U.S. Cl. 323—315 **6 Claims**



1. A stabilized current source circuit comprising:

a first MOS transistor feeding a drain current to be used as a constant current output;

a second MOS transistor having a gate electrode connected to a gate electrode of said first MOS transistor;

a current source connected to the drain electrode of said second MOS transistor; and

a stabilized voltage source connected to the source of said second MOS transistor so as to keep the gate-source voltage of said second MOS transistor at a value which is closer to a threshold voltage value than the gate-source voltage of said first MOS transistor.

4,642,553

COMMUTATOR CONTAINING A SEMICONDUCTOR WITH UNIDIRECTIONAL CURRENT AND BIDIRECTIONAL VOLTAGE, AND WITH CONTROLLED INTERRUPTION AND AUTOMATIC IGNITION

Henri Foch, Toulouse, and Jacques Duparc, Le Vaudoue, both of France, assignors to Jeumont-Schneider Corporation, France

Filed Apr. 19, 1985, Ser. No. 724,993
Claims priority, application France, Apr. 20, 1984, 84 06286
Int. Cl.[4] H03K *17/72*
U.S. Cl. 323—322 **8 Claims**

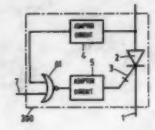
1. A commutator operable with unidirectional current and bidirectional voltage and with controlled interruption and automatic ignition, comprising

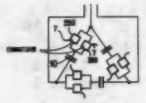
a unidirectional current semiconductor device of the controlled commutation type having terminals corresponding respectively to anode, cathode, and control,

first adaptor circuit means having an input connected to the anode terminal of said semiconductor device and providing an output logic signal indicating when the anode-to-cathode voltage of said semiconductor device is less than a predetermined positive value close to zero,

a logic gate having a first input connected to an output of said first adaptor circuit means to receive said logic signal, a second input which is a control signal input, and an output connected to an input of second adaptor circuit means which has an output connected to said control terminal of said semiconductor device,

said logic gate outputting an interruption signal to said second adaptor circuit means when said first adaptor circuit means outputs said logic signal and an interruption in-





struction signal is received at said control signal input of said logic gate,

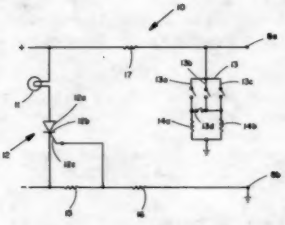
said second adaptor circuit means providing a control signal to said control terminal of said semiconductor device to trigger said semiconductor device absent an interruption signal output from said logic gate and providing a control signal to said control terminal of said semiconductor device to interrupt said semiconductor device in response to an interruption signal output from said gate.

4,642,554

FAIL-SAFE ELECTRICAL-GROUND INDICATOR

Daniel A. Aucoin, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1985, Ser. No. 694,876
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—51 **12 Claims**

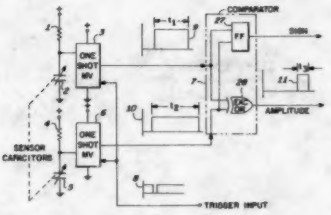


1. A device for checking the integrity of an electrical ground indicator used to determine whether a vessel or other equipment has adequate electrical grounding, comprising: a plurality of electrically grounded parallel resistors, means for making electrical contact between the indicator and each one of the resistors separately without making electrical contact with other resistors, means for making electrical contact between the indicator and all resistors simultaneously, means for determining whether an electrical current passing through the instrument and each separate resistor exceeds a specified value, and means for determining whether an electrical current passing through the indicator and all resistors at the same time exceeds the specified value, thereby providing an indication of the integrity of the instrument.

4,642,555
DIFFERENTIAL CAPACITANCE DETECTOR

Harold L. Swartz, Glendale, and Jeffrey C. Heidel, Phoenix, both of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 31, 1985, Ser. No. 696,626
Int. Cl.[4] G01R 11/52, 27/26
U.S. Cl. 324—60 C 7 Claims



1. A differential capacitance detector comprising:

first monostable pulse generator means for generating a first pulse having a substantially constant amplitude and having a width representative of a capacitance value of a first sensing capacitor;

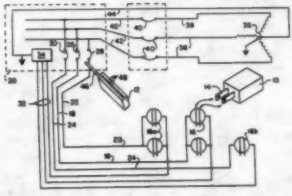
second monostable pulse generator means for generating a second pulse having a substantially constant amplitude and having a width representative of a capacitance value of a second sensing capacitor; and

comparator means coupled to receive said first and second pulses and responsive to pulse durations thereof for providing a third signal representative of pulse width differences between said first and second pulses, thereby representative of capacitive difference between said first and second sensing capacitors.

4,642,556
TRACING ELECTRICAL CONDUCTORS BY HIGH-FREQUENCY CONSTANT-ENERGY-CONTENT PULSE LOADING

Joseph P. Pecukonis, Littleton, Colo., assignor to Pasar, Inc., Denver, Colo.

PCT No. PCT/US84/00555, § 371 Date Jul. 10, 1984, § 102(e) Date Jul. 10, 1984, PCT Pub. No. WO85/04726, PCT Pub. Date Oct. 24, 1985
Continuation-in-part of Ser. No. 236,050, Feb. 19, 1981, Pat. No. 4,491,785. This PCT application Apr. 12, 1984, Ser. No. 631,544
The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.
Int. Cl.[4] G01R 31/02, 19/145
U.S. Cl. 324—67 30 Claims



18. Apparatus for tracing and identifying an electrical current carrying conductor or similar means in an electrical network which is energized with a varying voltage and which is carrying current therethrough at a power frequency, comprising in combination:

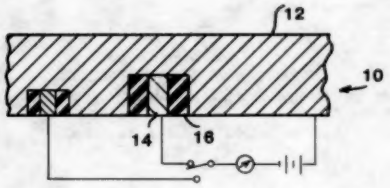
transmitter means for connection to said conductor and for conducting electrical signal current through said conductor in repetitious transmission cycles, each transmission cycle being defined by a predetermined waveform having a predetermined time period during which a plurality of pulses of signal current are conducted through said conductor at a predetermined frequency, the signal current pulses being of sufficient magnitude to induce about said conductor a predetermined electromagnetic field signal having a frequency characteristic corresponding to the predetermined frequency at which signal current pulses are conducted during said predetermined time period, said transmitter means further including means for selectively conducting current in the conductor to establish a predetermined approximately constant energy content for each signal current pulse, the predetermined approximately constant energy content of each signal current pulse being established in response to the current conducted in the conductor due to the signal current pulse and the time width duration of the signal current pulse; and

receiver means, operative when placed in proximity of said conductor at a location remote from said transmitter means, for detecting the predetermined electromagnetic field signal and for distinguishing the predetermined electromagnetic field signal from other signals which may be present about said conductor.

4,642,557
METHOD OF AND APPARATUS FOR DETECTING EROSION

Bruce A. Ross, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 10, 1984, Ser. No. 639,474
Int. Cl.[4] G01N 27/00
U.S. Cl. 324—71.2 3 Claims



1. A method for determining when a predetermined amount of material has been removed from the interior surface of an electrically conductive conduit which is subjected to erosive wear as a result of the passage of a solid material therethrough, the surface which is subjected to the wear being disposed oppositely with respect to an outer surface of the conduit, said method comprising the steps of:

forming at least a first blind hole in the conduit, the blind hole extending from the outer surface toward the inner surface which is subjected to wear and having a depth commensurate with the removal of a predetermined amount of material from the inner surface;

forming a coaxial probe having a length which is at least equal to the depth of the first blind hole, the probe comprising a conductor surrounded by an insulator;

inserting the probe in the first blind hole until the probe conductor contacts the conduit at the base of the hole;

performing a continuity check to insure that the probe conductor is in electrical contact with the conduit at the base of the first hole;

securing the probe in the first hole; and

periodically repeating the continuity check to determine when electrical contact between the probe conductor and conduit has been interrupted, a lack of continuity indicating that sufficient material has been removed from the inner surface so that the inserted end of the probe has been exposed.

4,642,558
MINIATURE ELECTROMAGNETIC FIELD MEASUREMENT PROBE

Theodore E. Batchman, and George E. Gimpelson, both of Charlottesville, Va., assignors to Univ. of Virginia Alumni Patents Found., Charlottesville, Va.

Filed Apr. 1, 1983, Ser. No. 481,389
Int. Cl.[4] G01R *31/00*
U.S. Cl. 324—72.5 10 Claims

ANTENNA
DIODE RECTIFIER
HIGH RESISTIVITY OVERLAID LEADS
OUTPUT TO HIGH IMPEDANCE AMPLIFIER (OUTPUT FREQUENCY DC TO 1000 Hz)

1. An electromagnetic field measurement probe for measuring electromagnetic fields in free space and in vivo (tissue), comprising:

antenna means for detecting electromagnetic field and producing a corresponding electrical output;

combined transmission and low pass filter means for filtering said electrical output and transmitting said filtered electrical output;

said transmission and low pass filter means including a lead structure having a dielectric center with opposing faces on which a layer of high resistivity lead material is respectively deposited;

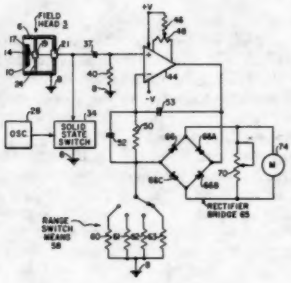
said low pass filter and said transmission means being encapsulated on a dielectric substrate of relatively low permeativity (e_r less than 4) for enabling precise measurements in-vivo;

said antenna means including two antenna elements respectively connected to a corresponding said layer of high resistivity lead material.

4,642,559
ELECTROSTATIC FIELD METER

Carlton M. Slough, Spring, Tex., assignor to Texaco, Inc., White Plains, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,675
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—72 8 Claims



1. A hand holdable electrostatic field meter comprising:

head means for deriving an electrical charge representative of the direction and strength of an electrostatic field in the presence of the electrostatic field;

converting means for converting the electrical charge to an AC signal,

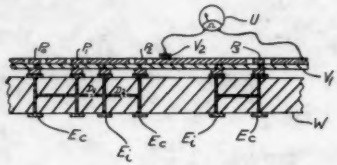
means for providing an indication of the strength of the electrostatic field in accordance with the AC signal from the converting means, and

a housing for housing all of the elements in a manner so that the meter may be hand held.

4,642,560
DEVICE FOR CONTROLLING CONTINUITY OF PRINTED CIRCUITS

Robert Morille, Saint Marcel Les Valence, and Jacques Saroul, Valence, both of France, assignors to Crouzet, Paris, France

Filed May 22, 1984, Ser. No. 613,024
Claims priority, application France, Dec. 28, 1983, 83 21055
Int. Cl.[4] G01R *15/12, 31/28*
U.S. Cl. 324—73 PC 5 Claims



1. A device for continuity testing multiple equipotential branches formed in a conductor network of a multi-layer printed circuit, said circuit comprising an assembly E of conductor elements accessible on at least one of its outer faces, said device comprising:

interface connector means for said printed circuit adapted to connect, by superposition with said outer face, the conductor element of a first subassembly E_i of said assembly E to a single first conducting area, and the conductor element of a second subassembly E_c of said assembly E to a plurality of second conducting areas, the two subassemblies E_i and E_c being distinct and electrically predefined so that $E=E_i+E_c$;

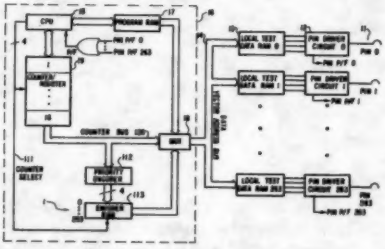
means comprising at least a mobile conducting area in contact with one of said first and second conducting areas, for scanning said interface connector means; and

indicator means, electrically connected between said first conducting area and said mobile conducting area, for detecting defects in electrical continuity between said first conducting area and said second conducting areas.

4,642,561
CIRCUIT TESTER HAVING ON-THE-FLY COMPARISON OF ACTUAL AND EXPECTED SIGNALS ON TEST PINS AND IMPROVED HOMING CAPABILITY

William A. Groves; Matthew L. Snook, and Rodney Browen, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 503,464, Jun. 13, 1983. This application Jan. 3, 1984, Ser. No. 567,824
Int. Cl.[4] G01R *31/28*
U.S. Cl. 324—73 R 1 Claim



1. An improved method of homing a circuit under test, of the type in which the state of a circuit is monitored by detecting on at least one node in the circuit the signal present on that node

and in which signals are applied to the circuit under test to alter the state of the circuit through a sequence of states until the circuit enters a desired reference state as indicated by signals generated by the circuit on a first subset of the nodes that are monitored, said reference state being referred to herein as a home state and said method comprising the steps of:

for each node in the first subset, generating a home state signal indicating the signal expected on that node when the circuit is in a home state;

comparing immediately each signal detected on a node in said first subset with the signal expected on that node when the circuit is in a home state; and

when the detected signal on a node in the first subset is the same as the home state signal for that node, producing a signal indicating that the circuit is in a home state, whereby a sequence of test signals which are to be applied once the circuit is in a home state can be initiated.

4,642,562

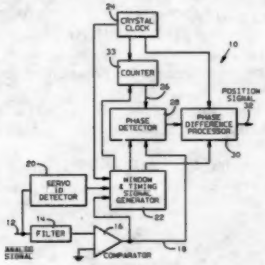
PHASE DIFFERENCE DEMODULATOR

David W. Collins, Rochester, and Michael A. Weed, Spring Valley, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,305

Int. Cl.[4] G01R *25/00*

U.S. Cl. 324—83 D **14 Claims**



1. A phase demodulation system comprising:

a. means for measuring phase difference between two signals of the same frequency;

b. means for generating a digital output representative of said phase difference by approximating said phase difference with a digital means and means generating an error in approximation represented by an analog remainder, said error generating means including an exclusive "OR" gate for converting said approximated phase difference to pulse widths, and a current source means connected to an integration means, said current source means and said integration means connected to said two signals and said pulse widths differentially gating said current source means; and,

c. means for converting said analog remainder to a digital value which is added to said approximation of said phase difference of said digital means whereby the precision of the digital output signal representing said phase difference results in enhanced accuracy.

4,642,563

POWER LINE IMPULSE MEASUREMENT SYSTEM

Alexander McEachern, Oakland, and Steve Terry, San Carlos, both of Calif., assignors to Basic Measuring Instruments, Foster City, Calif.

Filed May 28, 1985, Ser. No. 738,584

Int. Cl.[4] G01R *1/00, 19/00, 29/02*

U.S. Cl. 324—111 **15 Claims**

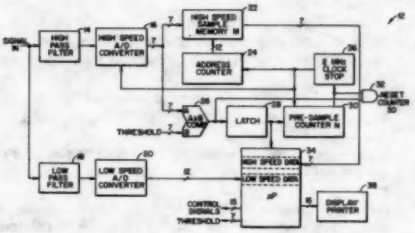
1. An impulse measurement system for displaying impulses which occur in alternating current electromagnetic energy waveform, said waveform having a plurality of periodic cycles which defines a waveform frequency, and each of said impulses occurring at an impulse frequency that is substantially greater than said waveform frequency, wherein the presence of said impulse defines an occurrence, and said impulse is a manifestation of an event, comprising

high frequency filtering means for receiving and filtering said waveform, and passing filtered impulses;

low frequency filtering means for receiving and filtering said waveform, and passing a filtered waveform;

high speed sample memory means for recording said filtered impulses;

memory means for recording said filtered waveform; and



comparator means for receiving both said filtered impulse and a predetermined amplitude threshold signal and generating a memory recording signal for controlling the recording of said filtered waveform by said memory means, said memory recording signal is generated when said filtered impulse exceeds said amplitude threshold signal;

display means for receiving said filtered impulses and said filtered waveform from said high speed memory means and said memory means, respectively, and displaying both said filtered impulses and said filtered waveform simultaneously, thereby permitting efficacious identification of the cause of said impulses.

4,642,564

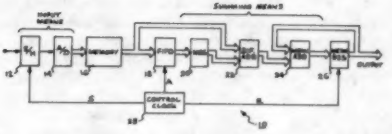
MEASURING CIRCUIT AND METHOD FOR POWER DISTRIBUTION EQUIPMENT

James R. Hurley, Brookfield, Wis., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 15, 1984, Ser. No. 620,881

Int. Cl.[4] G01R *19/02*

U.S. Cl. 324—132 **5 Claims**



1. A measuring circuit for obtaining a mean square value of a power distribution line parameter comprising:

a sampling circuit, which samples the power parameter at a sampling frequency (FS) which is an odd (Nth) harmonic of the fundamental frequency (FF) of the power parameter to provide sample values;

squaring means producing a squared sample value proportional to the squared value of a sample;

accumulator means storing the values of the most recent N values of the squared sample values;

summing means which provides a mean square value pro-

portional to the sum of the N most recent values of the squared sample values stored in the accumulator means;

an analog to digital converter for digitizing the sample values and, wherein

said squaring means comprises a squared memory which stores digitized value substantially equal to one/Nth the values of the square of the sample values likely to be encountered, said memory being selectively addressed by the digitized sample value to produce a squared sample value which is very nearly equal to one/Nth the value of the square of the sample value;

said accumulator means comprises:

a first in first out storage register which stores N squared sample values accepting a newest squared sample value at its input and presenting the oldest squared sample value at its output; and

said summing means comprises,

a negator accepting the oldest squared sample value from said first in first out storage register and negating the value;

a differential adder which sums the values of the negator and of the squared memory to produce a differential squared value;

a mean square register which stores a mean square value of the sum of the most recent N values of the squared sample means; and

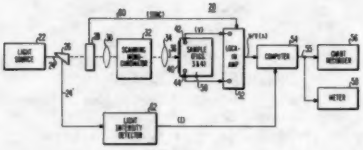
a mean square adder which sums the output of the mean square register and of the differential adder to produce an updated mean square value to be stored in said mean square value register.

4,642,565

METHOD TO DETERMINE THE CRYSTALLINE PROPERTIES OF AN INTERFACE OF TWO MATERIALS BY PHOTOVOLTAGE PHENOMENON

Lubomir L. Jastrzebski, Plainsboro, N.J., and Jacek Lagowski, Wobum, Mass., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 29, 1984, Ser. No. 666,192
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 R **9 Claims**



1. A method for determining the crystalline quality of a crystalline lattice of one material near an interface between said one material and a different material of different crystalline lattice, said one material (1) having a surface comprising an exposed surface portion opposed to said interface and an unexposed surface portion in coplanar relation with said exposed surface portion and opposed to said interface, (2) having negligible absorption in a given optical spectrum, and (3) having a known reflection coefficient at said exposed surface portion; said exposed surface portion having a semi-transparent electrode thereover and said unexposed surface portion having an ohmic contact thereto, comprising the steps of:

(a) exposing said exposed surface portion to a light beam having a selected wavelength;

(b) varying the intensity of said light beam to a value to be sufficient to saturate the trapping centers of said one material;

(c) exposing said exposed surface portion to said light beam at said intensity and scanned sequentially with wavelengths having values within said optical spectrum whereby light reflected between said interface and said exposed surface portion oscillates in intensity between extrema as a result of interference reflections between said exposed surface portion and said interface manifesting a corresponding photovoltage signal oscillation;

(d) measuring the photovoltage signals appearing between said exposed surface portion and said unexposed surface portion at each respective wavelength to obtain a series of photovoltage signals corresponding to each wavelength;

(e) determining from said photovoltage signals the photovoltage extrema; and

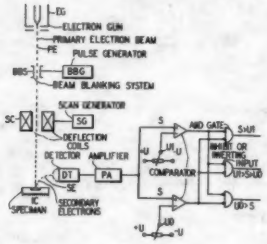
(f) determining from said photovoltage extrema the crystalline quality of said one material near said interface, the smaller the ratio of said photovoltage extrema the better the crystalline quality of said material near said interface.

4,642,566

METHOD FOR THE REGISTRATION AND REPRESENTATION OF SIGNALS IN THE INTERIOR OF INTEGRATED CIRCUITS BY CONSIDERING EDGE STEEPNESS AND APPARATUS FOR IMPLEMENTING THE METHOD

Peter Fazekas, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,473
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334534
Int. Cl.[4] G01R *31/28, 31/26*
U.S. Cl. 324—158 R **4 Claims**



1. A method for registering signals at integrated circuits, the signals having logic levels, comprising the steps of:

defining upper and lower thresholds for the logic levels 1 and 0, respectively, and setting respective thresholds at respective input circuits for the logic level;

positioning a pulsed primary beam to a measuring location of the integrated circuit to generate secondary particles;

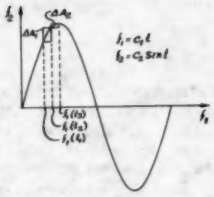
detecting the secondary particles and generating a corresponding signal to be registered;

applying the signal to be registered to the two input circuits to detect and provide position signals indicating the chronological positions of signal edges at the logic levels by comparing the signal to the thresholds and producing a logical 1 at times in which the signal is greater than the upper threshold and the logical 0 at times when the signal is smaller than the lower threshold, and determining the signal edges from the chronological spacing of successive signal regions having logical levels 0 and 1, whereby the chronological position of the signal edges is defined by the times at which the signal is equal to the thresholds.

4,642,567
METHODS FOR TWO DIMENSIONAL NUCLEAR MAGNETIC RESONANCE IMAGING

Jerome I. Kaplan, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Jun. 4, 1984, Ser. No. 617,163
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—309 7 Claims



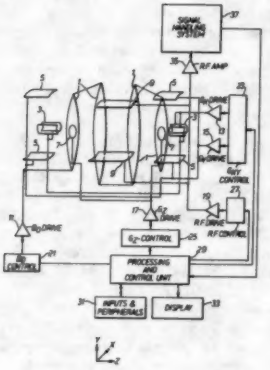
1. In a method for nuclear magnetic resonance imaging comprising sensitizing a region of an object in a static magnetic field wherein the magnetization of the spins are transverse to the static field, applying a time varying magnetic field gradient to the sensitized region of the object, detecting radiated electromagnetic energy from the sensitized region, and reconstructing spin information for each element within the region from the received radiated electromagnetic energy signals, the improvement comprising:

weighting the detected radiated electromagnetic energy signals to compensate for the use of time varying magnetic field gradients that do not sample equal areas of phase space in equal time intervals.

4,642,568
NUCLEAR MAGNETIC RESONANCE METHODS AND APPARATUS

Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Wembley, England

Filed Nov. 19, 1984, Ser. No. 673,190
Claims priority, application United Kingdom, Nov. 25, 1983, 8331501
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—309 7 Claims



1. A method of investigating the spatial distribution of a quantity in a selected region of a body by the use of nuclear resonance techniques, said method comprising the steps of:

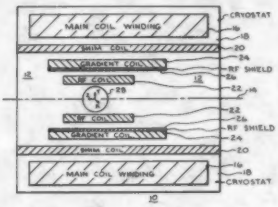
(a) exciting nuclear magnetic spins in said region, and

(b) subsequent to said exciting step, spatially encoding said nuclear spins in said selected region at least partially by applying to said region a radio frequency magnetic field having a gradient across said region.

4,642,569
SHIELD FOR DECOUPLING RF AND GRADIENT COILS IN AN NMR APPARATUS

Cecil E. Hayes, Wauwatosa, and Matthew G. Eash, Oconomowoc, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 16, 1983, Ser. No. 562,121
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—318 7 Claims



1. An NMR apparatus including means for producing a homogeneous magnetic field, a radio frequency (RF) coil for transmitting and receiving RF energy, a gradient coil for generating pulsed linear magnetic field gradients at audio frequencies and a decoupling shield disposed between said RF and gradient coils, said RF coil being disposed within the shield, said shield comprising:

a first array made up of a multiplicity of electrically conductive regions separated by a first set of relatively narrow, compared to the width of said conductive regions, non-conductive regions, said array being disposed on the inner shield surface;

a second array made up of a multiplicity of electrically conductive regions separated by a second set of relatively narrow, compared to the width of said conductive regions, non-conductive regions, said first and second arrays being disposed on opposite surfaces of a member formed of a high dielectric material, the conductive regions of one array being offset relative to the conductive regions of the other array such that the conductive regions of the one array bridge the non-conductive regions of the other array to form a plurality of capacitive elements which act essentially as electrical short-circuits at radio frequencies and which transmit substantially unaffected the homogeneous magnetic field and the audio frequencies associated with the pulsed magnetic field gradients.

4,642,570
METHOD AND APPARATUS FOR COMPLEX RESISTIVITY MEASUREMENTS WITH ELIMINATION OF ELECTROMAGNETIC COUPLING EFFECTS

Ben K. Sternberg, Ponca City, Okla.; Donald E. Dunster, Jakarta, Indonesia, and Kenneth D. Honeycutt, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

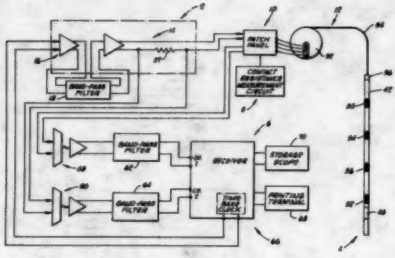
Filed Mar. 25, 1983, Ser. No. 478,831
Int. Cl.[4] G01V 3/24, 3/38
U.S. Cl. 324—366 3 Claims

1. A method of determining the induced polarization response of a formation in which a borehole is disposed, comprising:

lowering a logging tool into said borehole, said logging tool having a first set of two electrodes and a second set of two electrodes;

conducting a first current between said electrodes of said first set of electrodes and through said formation;

detecting with said second set of electrodes a first voltage produced in said formation by said first current;
determining a first phase response from said detected first voltage;
determining the resistivity of the formation from said conducted first current and said detected first voltage;
determining the contact resistances individually of each of the electrodes of said first set of two electrodes and said second set of two electrodes;
replacing said first set of two electrodes and said second set of two electrodes with a dummy load simulating the resistivity of the formation and the contact resistances of each of the electrodes;
conducting a second current through said dummy load;
detecting a second voltage produced in said dummy load by said second current;
determining a second phase response from said second detected voltage, said second phase response indicating the electromagnetic coupling; and
subtracting said second phase response from said first phase response to obtain a corrected induced polarization response of the formation.

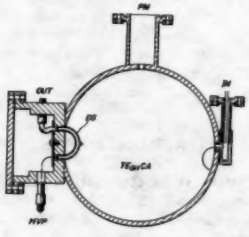


4,642,571

MICROWAVE PULSE SOURCE

Kazuo Minami, Yokohama, and Mitsuru Awano, Tokyo, both of Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

Filed Jul. 10, 1985, Ser. No. 753,631
Claims priority, application Japan, Jul. 18, 1984, 59-148871
Int. Cl.[4] H03K *3/55;* **H01P** *7/06;* **H01J** *17/64*
U.S. Cl. 328—59 **5 Claims**



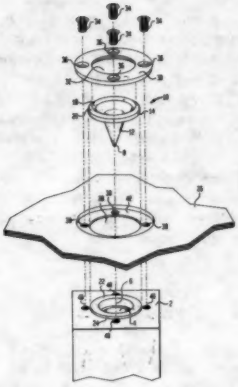
1. A microwave pulse source, comprising a superconducting cavity having an input port and an output port, an input coupler disposed at said input port, an output coupler disposed at said output port, said output coupler including a discharge tube which loops into said cavity in such a manner that the degree of coupling of said output coupler is suddenly maximized upon occurrence of a discharge plasma in said discharge tube and microwave energy flows from said cavity via said discharge plasma, the cavity having a time constant whose value when said output coupler has a minimum degree of coupling is substantially longer than that when said output coupler has a maximum degree of coupling, whereby input microwave energy with a certain power delivered at said input port is accumulated in said cavity when said output coupler has the minimum degree of coupling and an output microwave pulse with a much larger pulsed power than said power of the input microwave energy is extracted from the output port of said cavity when the degree of coupling of said output coupler is suddenly maximized by causing a discharge plasma at said discharge tube.

4,642,572

FILTER ADJUSTMENT SYSTEM FOR USE IN ELECTRONIC ACCELERATORS AND THE LIKE

George Menor, Martinez, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Aug. 28, 1984, Ser. No. 644,842
Int. Cl.[4] H01J *33/04, 3/14*
U.S. Cl. 328—228 **11 Claims**



1. A filter adjustment system for use in electron accelerators and the like for adjusting a filter which has a supporting flange at one end, comprising:
a fixed body having a supporting surface upon which said flange can be placed; and
means for engaging the filter and sliding it on said supporting surface, said engaging means being tiltably plugged into an immobile element, engaging the filter, and sliding the filter on said supporting surface upon being tilted.

4,642,573

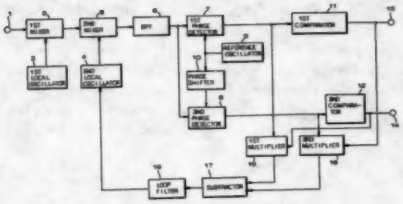
PHASE LOCKED LOOP CIRCUIT FOR DEMODULATING SUPPRESSED CARRIER SIGNALS

Tsutomu Noda; Keiro Shinkawa, and Nobutaka Amada, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1985, Ser. No. 783,521
Claims priority, application Japan, Oct. 5, 1984, 59-208188; Oct. 31, 1984, 59-227721; Oct. 31, 1984, 59-227724
Int. Cl.[4] H03D *1/24, 3/02;* **H04L** *27/22*
U.S. Cl. 329—50 **6 Claims**

1. A phase locked loop circuit for receiving a suppressed carrier input signal for use in a heterodyne receiver, comprising a mixer, a local oscillator, a reference oscillator oscillating at a frequency corresponding to an intermediate frequency, a 90° phase shifter, a first and second phase detector, a first and a second comparator, a first and a second multiplier, a subtractor and a loop filter, the operation of said phase locked loop circuit being such that the suppressed carrier input and the output of said local oscillator are applied to said mixer, the output of said mixer is applied to said first and second phase

detectors, the output of said reference oscillator is applied directly to said first phase detector and applied through said 90° phase shifter to said second phase detector, the outputs of said first and second phase detectors are applied to said first and second comparators respectively, the output of said first phase detector and the output of said second comparator are



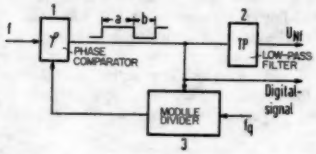
applied to said first multiplier, the output of said second phase detector and the output of said first comparator are applied to said second multiplier, the output of one of said first and second multipliers is subtracted in said subtractor from the output of the other, and the resultant output of said subtractor is applied to said local oscillator through said loop filter.

4,642,574

DIGITAL QUARTZ-STABILIZED FM DISCRIMINATOR

Ludwig Hofmann, Lohhof, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Oct. 22, 1985, Ser. No. 790,211
Int. Cl.[4] H03D *3/02, 13/00*
U.S. Cl. 329—50 **1 Claim**



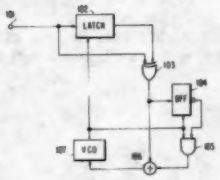
1. A digital crystal-stabilized FM-discriminator comprising a phase-locked loop (PLL) which contains a phase comparator and a switchable frequency divider, whereby an input signal of the discriminator and the output signal of the frequency divider are supplied to the phase comparator and a crystal-stabilized frequency f_q and the output signal of the phase comparator are supplied to the frequency divider, characterized in that a low-pass filter is connected into the signal transmission path at the junction point of the output of the phase comparator and the input of the frequency divider, and the output signal of the phase comparator being supplied to said low-pass filter and a voltage U_{Nf} is supplied from the output of said low pass filter, and said frequency divider generates a signal which contains the corner frequencies f_u and f_o of the discriminator; and the frequency of said input signal is $f_{Ein}=a\cdot f_o+b\cdot f_u$ where $a+b=1$ and a and b indicate the pulse-duty factor of the output signal of the phase comparator.

4,642,575

PHASE-LOCKED LOOP WITH SUPPLEMENTAL PHASE SIGNAL

Botaro Hirosaki, and Takashi Kuriyama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 6, 1985, Ser. No. 805,536
Claims priority, application Japan, Dec. 6, 1984, 59-257842
Int. Cl.[4] H03L *7/06*
U.S. Cl. 331—1 A **5 Claims**



1. A phase locked loop to which a random two-level code sequence signal derived from clock pulses having a predetermined frequency is applied as an input signal, comprising:

voltage controlled oscillator means for generating local clock pulses;

discriminator means responsive to said local clock pulses for producing a discrimination signal;

means for producing a first phase difference signal between the input signal and the discrimination signal;

phase supplement signal generating means responsive to the first phase difference signal and the local clock pulses for producing a phase supplement signal; and

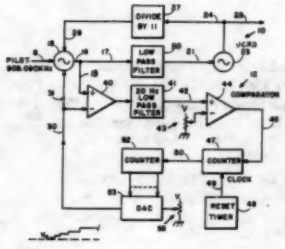
means responsive to the first phase difference signal and the phase supplement signal for producing a control signal to control the voltage controlled oscillator.

4,642,576

METHOD OF LOCKING A MASTER OSCILLATOR IN A NARROWBAND PHASE-LOCK LOOP TO A PILOT TONE

Raymond D. Fast, Coquitlam, and Brian A. Murray, Burnaby, both of Canada, assignors to Microtel Limited, Burnaby, Canada

Filed Feb. 7, 1985, Ser. No. 698,991
Int. Cl.[4] H03L *7/00*
U.S. Cl. 331—1 R **11 Claims**



1. The method of frequency locking the output signal generated by a voltage controlled oscillator (VCO) in a phase-lock loop to the frequency of a pilot signal comprising the steps of:

producing a control voltage which is an error signal that is a measure of the difference between the phases of the VCO output signal and the pilot signal when the loop is locked and which is a beat frequency signal having a frequency proportional to the difference between the frequencies of the VCO output signal and the pilot signal when the loop is not locked;

coupling the error signal to the VCO for controlling the operation thereof;

blocking the beat frequency signal from the VCO; and

sweeping the VCO at a variable sweep rate for causing the VCO output signal frequency to vary over a frequency band which includes the pilot frequency.

4,642,577

INJECTION-LOCKED WAVEGUIDE OSCILLATOR

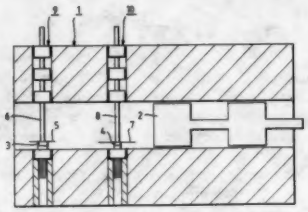
Robert N. Bates, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1986, Ser. No. 837,622

Claims priority, application United Kingdom, Mar. 22, 1985, 8507520

Int. Cl.⁴ H03B 7/14, 9/14

U.S. Cl. 331—47 **6 Claims**



1. A waveguide oscillator comprising waveguide cavity means, a first oscillator diode which is disposed in a first portion of the waveguide cavity means and which is operable to oscillate at a fundamental frequency above the cut-off frequency of the first portion of the waveguide cavity means, and a second oscillator diode which is disposed in a second portion of the waveguide cavity means and which is operable to oscillate at a fundamental frequency that is below the cut-off frequency of the second portion of the waveguide cavity means and that has a harmonic frequency above the cut-off frequency of the second portion of the waveguide cavity means, said harmonic frequency being approximately equal to the free-running fundamental frequency at which the first diode oscillates if the second diode is not oscillating, wherein in operation the first diode receives electromagnetic energy at said harmonic frequency from the second diode whereby the fundamental frequency of the first diode is locked to said harmonic frequency.

4,642,578

PUSH-PULL RADIO FREQUENCY CIRCUIT WITH INTEGRAL TRANSISTION TO WAVEGUIDE OUTPUT

Wilfred P. Bennett, 21 Catskill Ct., Belle Mead, N.J. 08502

Filed Feb. 26, 1986, Ser. No. 832,790

Int. Cl.⁴ H03B 5/18

U.S. Cl. 331—100 **5 Claims**

1. A radio frequency, circuit comprising:

a resonant push-pull circuit which produces a radio frequency signal having a predetermined wavelength, said push-pull circuit including

(a) two cylindrical conductors mounted side by side and in parallel alignment having first and second ends,

(b) two power vacuum tubes, each said vacuum tube having a respective anode to which the first end of a respective said cylindrical conductor is connected,

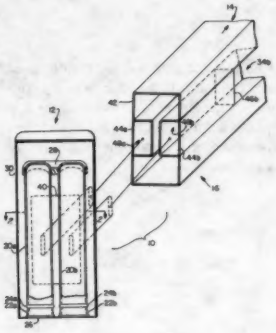
(c) a ground plane to which said vacuum tubes are mounted, and

(d) a conductive yoke located at the second ends of said cylindrical conductors which provides short circuiting of said two cylindrical conductors;

a double ridged rectangular waveguide, having recesses along the length thereof and a proximal end located adjacent said resonant circuit, for transmitting the power produced by said resonant circuit; and

a coupling transition which joins said waveguide to said resonant circuit including

(a) two relatively flat, elongate, rectangular conductors, a respective said flat conductor having one end attached to a respective said cylindrical conductor intermediate the ends of the respective said cylindrical conductor such that the longitudinal axes of said flat conductors are parallel, the longitudinal axis of a respective said flat conductor extends perpendicular to the longitudinal axis of a respective cylindrical conductor, and the major lateral axis of a respective said flat conductor is parallel to the longitudinal axis of a respective said cylindrical conductor,



(b) two conductive side covers, respective ones of said side covers being attached along a respective external recess of said rectangular waveguide starting at the proxixal end of said waveguide to form a pair of elongate pockets in the recesses,

(c) two conductive end covers, respective ones of said end covers being attached to respective ends of said side covers distal from the proximal end of said waveguide and to the periphery of the respective recess to form respective closed ends in said pockets, and

(d) a shielding enclosure surrounding said resonant circuit, said enclosure having an opening through which said flat conductors extend and about which the proximal end of said waveguide is attached such that respective said flat conductors are received in respective pockets in said waveguide and terminate in an open circuit.

4,642,579

IC LOW-CAPACITANCE, LOW-FREQUENCY, LOW-CURRENT, NON-RADIATING OSCILLATOR

Stephen W. Hobrecht, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 27, 1985, Ser. No. 780,789

Int. Cl.⁴ H03K 3/26

U.S. Cl. 331—111 **12 Claims**

1. An IC oscillator circuit comprising:

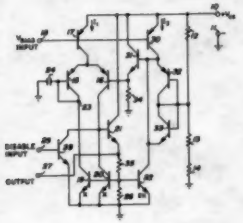
a differential amplifier having inverting and noninverting inputs and a single ended output created by means of a current mirror load;

a capacitor;

means for coupling said differential amplifier output to said inverting input and to said capacitor whereby said capacitor is charged through said differential amplifier and discharged through said current mirror load; and

switch means having an input coupled to said current mirror

and an output coupled to said differential amplifier noninverting input whereby a positive feedback is established



for switching said noninverting input between two distinct control levels.

4,642,580

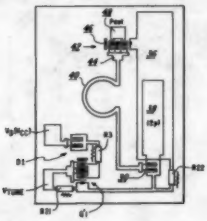
STABILIZED MICROWAVE VARACTOR

Bentley N. Scott, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 598,564, Apr. 9, 1984, which is a continuation of Ser. No. 293,040, Aug. 14, 1981, Pat. No. 4,481,487. This application Aug. 1, 1985, Ser. No. 761,463

Int. Cl.[4] H01L *27/04*; H03B *5/00*

U.S. Cl. 331—117 D **30 Claims**



1. A microwave varactor circuit comprising:

a varactor;

a microwave oscillating circuit connected to said varactor and having a minimum and a maximum microwave frequency of oscillation;

a varactor bias regulator, connected to said varactor to supply a bias voltage thereto;

said bias regulator having a response time corresponding to a frequency which is at least 10% of said minimum microwave frequency of oscillation;

said bias regulator being connected to said varactor with an intervening impedance which is less than 10 ohms at said minimum microwave frequency of oscillation.

4,642,581

ULTRASONIC TRANSDUCER DRIVE CIRCUIT

John J. Erickson, Kingston, N.Y., assignor to Sono-Tek Corporation, Poughkeepsie, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,349

Int. Cl.[4] H03B *5/30*

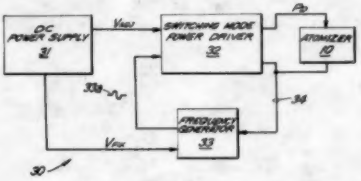
U.S. Cl. 331—154 **11 Claims**

1. An ultrasonic transducer drive circuit comprising:

(a) variable power driving means for supplying power to and driving the transducer;

(b) oscillating means for generating and supplying a drive signal, with a frequency proportional to the phase response of the transducer during operation, to the power driving means, said drive signal fixing the frequency of the power supplied to the transducer substantially at the frequency of the transducer;

(c) phase detecting and locking means for detecting the phase response of the transducer during operation and inputting a signal proportional thereto to the oscillating means such that the frequency of the oscillating means is



shifted proportional to the phase response of the transducer; and

(d) low pass filter means, coupled between the oscillating means and the phase detecting and locking means, for controlling the rate of the frequency shift of the oscillating means in response to said inputted signal from the phase detecting and locking means.

4,642,582

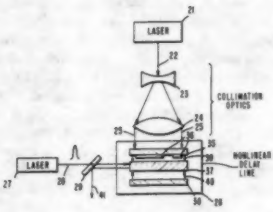
NONLINEAR DELAY LINE ENCODING/DECODING ARRANGEMENTS

Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 278,536, Jun. 29, 1981, abandoned. This application Feb. 26, 1986, Ser. No. 836,201

Int. Cl.[4] H01S *3/30*

U.S. Cl. 332—7.51 **8 Claims**



1. An encoding system for encoding and coherently modulating laser pulses, said system comprising:

a nonlinear medium having a predetermined length and cross-section and being capable of undergoing four-wave mixing;

first laser means for applying laser pulses to said nonlinear medium such that said pulses traverse the length thereof;

second laser means for applying light such that said light impinges upon said medium from two predetermined directions to provide pump beams for said four-wave mixing; and

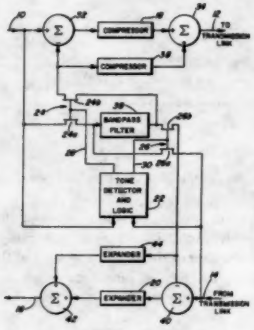
means for phase-encoding said light from said second laser means such that it has a predetermined spatial modulation thus providing spatially modulated laser light;

whereby said applied laser pulses traverse the length of said medium and interact with said spatially modulated laser light in a manner which produces said four-wave mixing in said medium, said four-wave mixing generating elongated encoded laser pulses which are temporally modulated in accordance with said predetermined spatial modulation.

4,642,583
NOISE REDUCTION IN COMPANDING ARRANGEMENTS

Dermot T. Fucito, Norcross; James E. Paul, and Milan Markovic, both of Stone Mountain, all of Ga., assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 19, 1984, Ser. No. 683,577
Int. Cl.[4] H04B *1/64*
U.S. Cl. 333—14 **7 Claims**



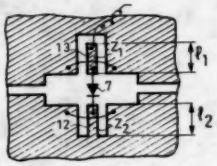
1. A companding arrangement comprising:
first input means for inputting signals to the companding arrangement in a first direction;
second input means for inputting signals to the companding arrangement in a second direction opposite the first direction;
first and second compressors each for compressing signals for transmission in the first direction via a transmission link;
first and second expanders each for expanding signals received in the second direction via said transmission link;
filter means having a predetermined pass band;
detection means connected to said first and second input means for detecting a frequency inside of the pass band in signals in each of the first and second directions; and
switching means responsive to said detection means detecting such a frequency in the first direction for connecting an input of said filter means to said input means for inputting signals in the first direction whereby signals in the first direction outside the pass band bypass said filter means and are fed to said first compressor and whereby signals in the second direction outside the pass band bypass said filter means and are fed to said first expander; and
whereby signals in said first direction inside the pass band are passed through said filter means and fed to said second compressor and whereby signals in said second direction inside the pass band are passed through said filter means and fed to said second expander.

4,642,584
SLOT-LINE SWITCHING AND LIMITING DEVICE FOR OPERATION AT MICROWAVE FREQUENCIES

Ronald Funck, Port Marly, and Jean Stévance, Aulnay sous Bois, both of France, assignors to Thomson-CSF, Paris, France

Filed Jan. 31, 1985, Ser. No. 696,769
Claims priority, application France, Feb. 24, 1984, 84 02853
Int. Cl.[4] H01P *1/15, 1/22*
U.S. Cl. 333—17 L **7 Claims**

1. A slot-line switching and limiting device for a slot-line operating at microwave frequencies, comprising: two metallized strips which are supported on a substrate and which define a slot therebetween, at least one diode which is mounted in parallel between the two strips and has an inductance produced by connections, a resistance and a junction capacitance, and a compensating element for compensating for the impedance presented by the inductance at high frequency, said element being constituted by at least one metallic section which is coplanar with the slot-line, connected in series with

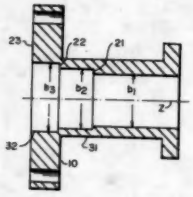


the diode and adjustable for length, said metallic section being inscribed within a zone formed in one of said strips from which said metallic section is separated by at least two non-metallized strips.

4,642,585
SUPERELLIPTICAL WAVEGUIDE CONNECTION

Saad M. Saad, Willowbrook, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Jan. 30, 1985, Ser. No. 696,439
Int. Cl.[4] H01P *1/16, 5/08*
U.S. Cl. 333—21 R **5 Claims**



1. A waveguide connection comprising the combination of a rectangular waveguide,
an elliptical waveguide having a cutoff frequency and impedance different from those of said rectangular waveguide,
an inhomogeneous stepped transformer joining said rectangular waveguide to said elliptical waveguide, said transformer having multiple sections all of which have inside dimensions small enough to cut off the first excitable higher order mode in a preselected frequency band,
each section of said transformer having a transverse cross-section defined by the following equation:

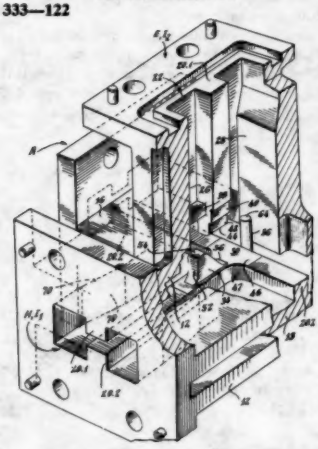
$$(2x/a)^p+(2y/b)^p=1$$

where a is the dimension of the inside surface of said cross-section along the major transverse axis, b is the dimension of the inside surface of said cross-section along the minor transverse axis, and x and y define the location of each point on the inner surface of the cross-section with reference to the coordinate system established by the major and minor transverse axes of the cross-section, respectively,
the value of said exponent p increasing progressively from the section adjacent to said elliptical waveguide to the section adjacent to said rectangular waveguide,
the magnitudes of p, a and b changing progressively from step to step along the length of said transformer so that both the cutoff frequency and the impedance of said transformer change monotonically along the length of said transformer.

4,642,586
LOW SWR HIGH POWER MULTIPLE WAVEGUIDE JUNCTION

Wayne D. Fowler, Burlington, Mass., assignor to Adams-Russell, Waltham, Mass.

Filed Apr. 20, 1984, Ser. No. 602,347
Int. Cl.[4] H01P *5/20*
U.S. Cl. 333—122 **24 Claims**



1. A low SWR, wide bandwidth, high power handling Magic T multiple arm waveguide junction comprising:

a Magic T mulitple arm waveguide structure having a common junction region where at least first and second waveguide input arms may deliver power to a pair of waveguide output arms,

said junction region having a first matching element located in alignment with the first waveguide input arm and being shaped to provide an impedance match to the first input arm while enabling the handling of high peak power without arcing, said junction region having a second matching element located generally in alignment with the first waveguide input arm and being shaped to provide an impedance match to the second waveguide input arm, said first and second input arms each having near the junction region a necked down waveguide portion whose cross-section is smaller in area than the input arms cross-sections that are away from the junction region, said necked down waveguide portions being so selected in area as to enhance impedance matching of the input arms to the waveguide structure over a desired bandwidth without low frequencies within said desired bandwidth being cut-off by the necked down waveguide portion, and

wherein the magic T has rectangular waveguides formed of opposing normally parallel walls and wherein said necked down segment of said first input arm is obtained by a reduction in the width of the largest dimension of the first input waveguide arm with a displacement, towards each other, by both opposing shorter walls.

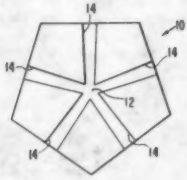
4,642,587
TAPERED FIVE-PORT WAVEGUIDE STAR JUNCTION

Majid Riaziat, and George A. Zdasiuk, both of Palo Alto, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 29, 1985, Ser. No. 738,712
Int. Cl.[4] H01P *5/12*
U.S. Cl. 333—125 **2 Claims**

1. A microwave junction assembly for matching five rectangular waveguides, over a frequency band having an upper frequency band edge and a lower frequency band edge, comprising:

five tapered waveguide lead sections lying in the H-plane in a five-fold rotational symmetry around an axis of rotational symmetry perpendicular to said H-plane, said sections leading from a periphery at one end of said waveguide lead sections into a central junction region located on said axis and at an opposite end of said waveguide lead

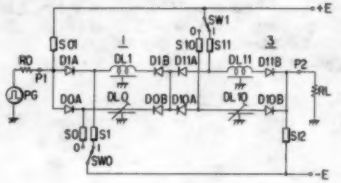


sections, each tapered waveguide lead section being tapered in a direction, in both cross-sectional dimensions, from said periphery to said central junction, each cross-sectional dimension being reduced by a factor of about 6/7 over the direction of the taper.

4,642,588
METHOD FOR ADJUSTMENT OF VARIABLE DELAY LINE

Kazuo Kameya, Tsurugashima, Japan, assignor to Elmec Corporation, Saitama, Japan

Filed May 22, 1984, Ser. No. 612,915
Claims priority, application Japan, May 26, 1983, 58-94347
Int. Cl.[4] H01P *9/00;* **H03H** *7/34*
U.S. Cl. 333—139 **4 Claims**



1. A method for the adjustment of a variable delay line, comprising:

configuring a variable delay line with two delay line elements of dissimilar delay times, the element having the smaller delay time comprising a microstrip line with a conductor and the element having the larger delay time comprising an inductance element having a conductor wound in a plurality of turns in the shape of a solenoid and one or more capacitors interconnecting the conductor and the ground;

selectively switching from one to the other of said two delay line elements to increase or decrease the delay time by a delay time difference produced by said selective switching between said two delay line elements; and

varying the delay time of the delay line element which has the smaller delay time by selectively varying the effective physical length of the conductor to achieve a desired delay time.

4,642,589

FEED THROUGH FILTER HAVING AN INSULATED BUSH FOR MOUNTING FILTER IN A BULKHEAD

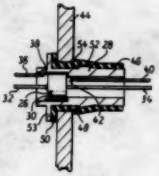
Jeffrey Chambers, Ulverston, England, assignor to Oxley Developments Company Limited, England

Filed Mar. 7, 1985, Ser. No. 709,223

Claims priority, application United Kingdom, Mar. 8, 1984, 8406110

Int. Cl.[4] H03H 7/01

U.S. Cl. 333—182 10 Claims



1. A high frequency interference suppression device comprising:

(a) a tubular metal sleeve means;

(b) a feed-through line passing through said tubular metal sleeve and electrically isolated therefrom,

(c) a capacitor having two electrodes connected to respective terminations, the capacitor being mounted within said tubular metal sleeve, with one termination of the capacitor electrically connected to the metal sleeve and the other termination isolated from said sleeve and connected to said feed-through line; and

(d) insulating bush means surrounding said metal sleeve and adapted to mount the metal sleeve in an aperture of a metal bulkhead so that the metal sleeve and both electrodes of the capacitor are electrically isolated from said bulkhead.

4,642,590

FREQUENCY MULTIPLIER HAVING OPEN AND SHORT CIRCUITED LINES RESONATING A MULTIPLIED OUTPUT FREQUENCY

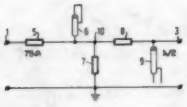
Johannes H. Buijs, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1985, Ser. No. 733,273

Claims priority, application Netherlands, May 18, 1984, 8401595

Int. Cl.[4] H03B 19/00, 19/16

U.S. Cl. 333—218 3 Claims



1. A frequency multiplier for generating a desired output frequency comprising:

a matching impedance having a first end for receiving an input signal;

a short-circuited transmission line having an input connected to a second end of said matching impedance for receiving said input signal, said short-circuited transmission line having a wavelength λ/4 for differentiating said input signal, where λ is the wavelength of said desired output frequency;

a first impedance having a first end connected to said input of said short-circuited transmission line and a second end connected to a point of constant potential for effecting a path between said input of said short-circuited transmission line and said point of constant potential;

a second impedance having a first end connected to said input of said short-circuited transmission line and a second end forming an output of said multiplier, said second impedance having substantially higher resistance than said matching impedance; and

an open-ended transmission line having an input connected to said second end of said second impedance for receiving said differentiated input signal, said open-ended transmission line having a wavelength λ/2 for resonating said differentiated input signal to said desired output frequency.

4,642,591

TM-MODE DIELECTRIC RESONANCE APPARATUS

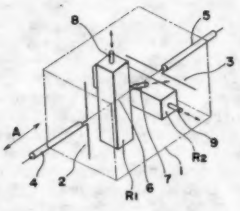
Yoshio Kobayashi, Oomiya, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 30, 1985, Ser. No. 770,965

Claims priority, application Japan, Nov. 16, 1984, 59-243090

Int. Cl.[4] H01P 1/219, 7/10

U.S. Cl. 333—227 21 Claims



1. A TM mode dielectric resonance apparatus comprising:

a case;

at least two TM mode dielectric resonators within the case;

one of said resonators being oriented in the case so as to resonate with a first mode having a magnetic field aligned in a first direction;

the other of said resonators being oriented in the case so as to resonate with a second mode having a magnetic field aligned in a second direction, such that the respective magnetic fields intersect each other; and

means for coupling said two magnetic fields with respect to each other.

4,642,592

GROUNDING AND SUPPORTING METAL MESH

Carlos L. Beeck, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

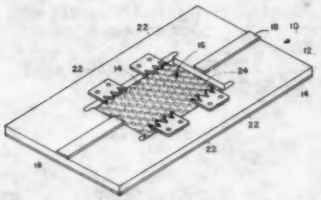
Filed Apr. 26, 1985, Ser. No. 727,947

Int. Cl.[4] H01P 1/00

U.S. Cl. 333—246 2 Claims

1. A metal mesh for electrically connecting the ground plane of a circuit board to the ground plane of a housing comprising a conductive material having an array of slits each defining a rectangular cross-section torsion bar affixed at the nodes such

that when expanded each node forms a torsion spring, the material being a beryllium/copper alloy plated with a metal



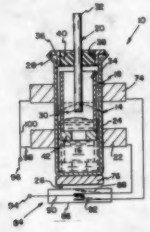
compatible with the material of said ground plane which is selected from the group consisting of nickel, tin and gold.

4,642,593

IMPULSE MERCURY RELAY WITH MAGNETIC INTERLOCK SWITCH

George H. Elenbaas, 25526 N. Shore Dr., Elkhart, Ind. 46514

Filed Apr. 17, 1984, Ser. No. 601,301
Int. Cl.[4] H01H *29/16*
U.S. Cl. 335—52 41 Claims



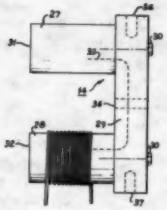
1. A liquid conductor relay, comprising:
a first electrode member having a top portion and a bottom portion,
a liquid conductor contained in said first electrode member,
a second electrode member received and secured in said first electrode member,
a displacement plunger in said first electrode member and movable between a first position wherein said liquid conductor and said second electrode member are in spaced-apart relation and a second position wherein said displacement plunger is displaced downwardly in said liquid conductor to displace said liquid conductor upwardly in contact with said second electrode member,
a coil means in proximity to said first electrode member for moving said displacement plunger from said first position to said second position when energized, said displacement plunger moving from said second position to said first position when said coil means is deenergized,
a magnet means movable with said displacement plunger between said first and said second positions, and
a magnetically-actuable switch means externally disposed of said first electrode member and in close proximity thereto, said magnetically-actuable switch means being actuated by said magnet means and said liquid conductor being in contact with said second electrode member when said coil means moves said displacement plunger and said magnet means from said first position to said second position.

4,642,594

U-SHAPED SOLID MAGNETIC CORE WITH AT LEAST ONE OPENING THROUGH THE MIDSECTION THEREOF

Ralf R. Volkmar, Berlin, Fed. Rep. of Germany, assignor to Siemens Energy & Automation, Inc., Atlanta, Ga.

Filed Aug. 10, 1984, Ser. No. 639,952
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—227 7 Claims



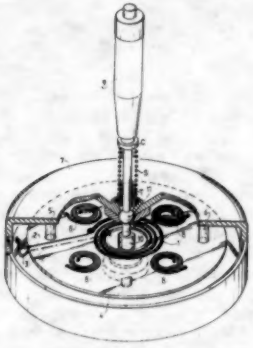
1. A magnetic yoke formed of a plurality of elements of solid magnetic material, comprising:
a pair of leg members;
a bridge member having magnetic flux lines;
means for connecting the leg members and the bridge member in a general U-form;
said bridging member having at least one opening extending through the midsection thereof, generally transverse thereto and generally transverse to the magnetic flux lines.

4,642,595

CONTACTLESS ELECTRIC CONTROL-HANDLE

Geurt J. Ruumpol, AB Wilp, Netherlands, assignor to Inductive Control Systems B.V., Ede, Netherlands

Filed Apr. 24, 1985, Ser. No. 726,690
Claims priority, application Netherlands, May 2, 1984, 8401391
Int. Cl.[4] H01F *21/06*
U.S. Cl. 336—135 9 Claims



1. A contactless electric control handle assembly comprising the combination of:
a housing having a control handle support portion;
a control handle having universal joint means cooperating with said support portion for presenting a universally movable control part projecting from one side of said support portion and an extension projecting from the other side of said support portion, said extension having a ferrite core portion, and means for normally positioning said universally movable control part, and consequently

said ferrite core portion, in a neutral position relative to said support portion;

base plate means carried by said housing for cooperation with said control handle;

said base plate means having an opening within which said ferrite core portion is received with clearance to allow universal movement of said ferrite core portion relative to said base plate means in response to universal manipulation of said movable control part;

a field coil on said base plate means and centered with respect to said ferrite core portion when it is in said neutral position thereof, said field coil comprising a conductor of generally flat, spiral-like form adapted to produce an alternating electromagnetic field; and

a set of inductive pick-up coils on said base plate means in outwardly spaced relation from said field coil and uniformly distributed therearound for equal inductive pick-up from said alternating electromagnetic field when said ferrite core portion is in its neutral position, each of said inductive pick-up coils comprising a conductor of generally flat, spiral-like form.

4,642,596

MINIATURIZED TRANSFORMER

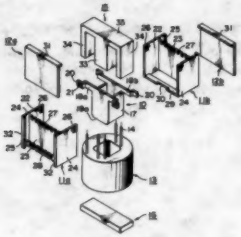
Shigeru Nakadai, and Teruo Tamada, both of Saitama, Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Sep. 11, 1985, Ser. No. 774,738

Claims priority, application Japan, Sep. 11, 1984, 59-137760[U]; Jan. 19, 1985, 60-6158[U]

Int. Cl.⁴ H01F *15/10, 27/30*

U.S. Cl. 336—98 **9 Claims**



1. A miniaturized transformer, comprising:

a bobbin provided with a drum portion on which a coil is wound; and

a pair of frames which are securely attached, from opposite sides, to said bobbin for accommodating said coil therein;

said bobbin including a pair of arm-like portions, each of said arm-like portions having first engagement means provided at each end portion thereof, said first engagement means being adapted to be disposed in engagement with second engagement means of said frames;

each of said pair of frames comprising a first and a second side plate portion which are disposed in opposing relationship with each other, and a third side plate portion disposed substantially at right angles with respect to said first and second side plate portions and connecting said first and second side plate portions together, each of said first and second side plate portions being provided with said second engagement means adapted for engagement with said first engagement means provided at each end portion of said arm-like portions of said bobbin;

wherein lead wires of the coil which are upwardly led out of said coil, are made to downwardly extend along the outer surfaces of said third side plate portions so as to be used as terminals.

4,642,597

OVERCURRENT RELAY

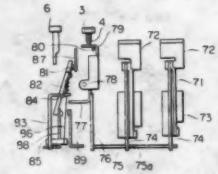
Yuji Sako, Kasugai, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

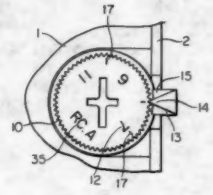
Filed Dec. 5, 1985, Ser. No. 804,739

Claims priority, application Japan, Dec. 6, 1984, 59-184310[U]

Int. Cl.⁴ H01H *71/16, 61/00, 75/08*

U.S. Cl. 337—82 **8 Claims**





1. An overcurrent relay comprising:

a housing having an external portion;

an overcurrent responsive mechanism, disposed within the housing, for opening or closing a pair of contacts in response to an overcurrent;

adjusting screw means for adjusting the operating current of said overcurrent reponsive mechanism, said adjusting screw means being rotatably supported by said housing and having serrations on the periphery thereof; and

an engaging member mounted on the exterior portion of said housing for engaging with a serration of said adjusting screw means for preventing an unintentional rotation of said adjusting screw means.

4,642,598

ADJUSTING DEVICE FOR THERMAL OVERLOAD RELAY

Haruo Ichikawa, Gyooda; Fumio Chida, Kitaadachi; Katsumi Akiike, Fukiage, and Kanichi Izumi, Kitasaitama, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 6, 1985, Ser. No. 805,878

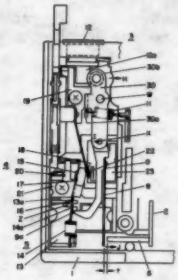
Claims priority, application Japan, Dec. 28, 1984, 59-200408[U]; Dec. 28, 1984, 59-200409[U]; Jan. 21, 1985, 60-6679[U]; Jan. 24, 1985, 60-8146[U]

Int. Cl.⁴ H01H *61/00, 71/16*

U.S. Cl. 337—82 **5 Claims**

1. In a thermal overload relay which includes a pair of contacts and a main bimetallic element whose bending as a result of thermal overload is transmitted through shifting means to a temperature compensating bimetallic element which controls a release lever whose triggering closes the contacts of the relay and which includes an adjusting means for controlling the setting of the release lever, the amount of bending the bimetallic element has to undergo to trigger the release lever to close the contacts, by the rotation of an adjusting dial which includes an eccentric stem portion, the improvement comprising supplemental means for setting the release

lever which comprises an adjusting pin which include an eccentric stem portion which abuts the eccentric stem portion of



the adjusting dial and means for rotating said eccentric stem portion of the adjusting pin.

4,642,599

CONTROL DEVICE

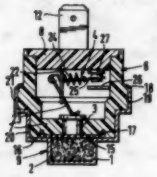
Roland Saur, Stuttgart, Fed. Rep. of Germany, assignor to Behr-Thomson Dehnstoffregler GmbH, Fed. Rep. of Germany

Filed Oct. 11, 1985, Ser. No. 786,492

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1984, 3437778

Int. Cl.[4] H01H *37/76*

U.S. Cl. 337—397 **16 Claims**



1. A control device having a thermostatic working element and a control element which is actuated thereby, comprising:

nonmetallic primary housing means, having walls which define an interior space, for enclsoing the control element;

a movable working element, extending through one of the walls of said primary housing means, for actuating the control element;

metallic secondary housing means, secured to the primary housing means and having means for receiving a thermally expandable material and means for holding said material immediately adjacent to the working element; and

elastic means, disposed between the expandable material and the working element and between the primary housing means and an interior surface of the secondary housing means, for retaining the expandable material in said receiving means;

wherein an edge of the secondary housing means is plastically deformed around a shoulder of the primary housing means to secure the housings together.

4,642,600

DEVICE FOR INDICATING THE FULLY CHARGED STATE OF A BATTERY

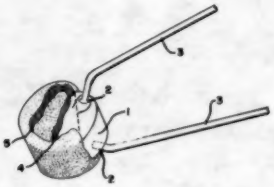
Klaus Gummelt, Garbsen; Jurgen Schulz, Hunstetten; Klaus Salamon, Kelkheim, and Heinrich Rabenstein, Frankfurt, all of Fed. Rep. of Germany, assignors to Varta Batterie A.G., Hanover, Fed. Rep. of Germany

Filed Apr. 2, 1985, Ser. No. 718,808

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414664

Int. Cl.[4] H01L *7/00*; H02J *7/04*

U.S. Cl. 338—34 **7 Claims**



1. A device for indicating the fully charged state of a storage battery, especially a lead-acid storage battery, by determining the temperature of a recombination catalyst, comprising a temperature-sensitive electronic component whose surface is provided at least partially with catalyst material, and is adapted for exposure to the battery gases, wherein the catalyst material is covered with an antimony-adsorbing layer.

4,642,601

HUMIDITY-SENSITIVE ELEMENT

Tooru Sugawara; Shigeki Tsuchitani; Noriyuki Kinjo, and Shuichi Ohara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP81/00166, § 371 Date Mar. 18, 1982, § 102(e) Date Mar. 18, 1982, PCT Pub. No. WO82/00362, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 20, 1981, Ser. No. 361,903

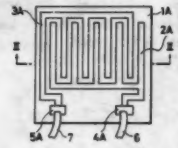
Claims priority, application Japan, Jul. 21, 1980, 55-98815; Dec. 8, 1980, 55-172054

Int. Cl.[4] H01L *7/00*

U.S. Cl. 338—35 **33 Claims**

1. A humidity-sensitive element comprising an insulating substrate, a pair of electrodesformed thereon apart from each other by a definite distance, and a coating of humidity-sensitive organic material formed to cover said electrodes, said coating of humidity-sensitive organic material being a synthetic polymer having both a hydrophobic moiety and another moiety selected from the group consisting of an ionic moiety and a hydrophilic moiety, to give the material a property to change its electric resistance depending upon the moisture content in the atmosphere, characterized in that said coating is formed by applying a latex comprising the synthetic polymer to said electrodes, the particles forming said latex having the hydrophobic moiety forming a core of each latex particle and the

another moiety forming a surface layer on the core of each latex particle, the material being an aggregate of said particles,



with the particles adhering to each other to form a continuous film for the coating.

4,642,602

ELECTRIC POTENTIOMETER

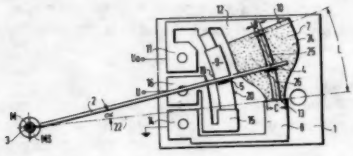
Wolfgang Maisch, Schwieberdingen, and Jürgen Treiber, Bamberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 29, 1985, Ser. No. 728,434

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424399; Oct. 13, 1984, 3437609

Int. Cl.[4] H01L *10/30, 10/32, 10/00, 1/012*

U.S. Cl. 338—162 **7 Claims**



1. An electric potentiometer having a carrier plate, a wiper having a predetermined width and an electrically conductive layer having a region to be stroked by said wiper, comprising an electrically nonconductive layer partially applied to said electrically conductive layer a pickup zone on said electrically conductive layer said pickup zone having a width less than said wiper and said pickup zone further having side portions which are defined by said electrically nonconductive layer.

4,642,603

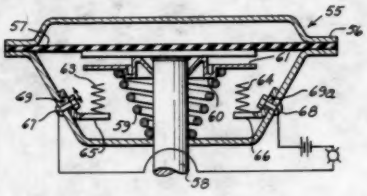
BRAKE ROD EXTENSION INDICATOR

Antonio Martinez, Jr., El Monte, Calif., assignor to Atel Corporation, South El Monte, Calif.

Continuation-in-part of Ser. No. 549,982, Nov. 8, 1983, abandoned. This application Jul. 11, 1984, Ser. No. 630,313

Int. Cl.[4] B60Q *1/00*

U.S. Cl. 340—52 B **6 Claims**



1. A brake actuator provided with means for sensing brake rod overtravel, said actuator comprising:

a housing defining a cavity, a diaphragm dividing said cavity into a first chamber and a second chamber, said first chamber being adapted to receive air under pressure, and said second chamber being vented to atmosphere and having a rod aperture therethrough, said housing including a peripheral wall bounding said second chamber;

a plunger comprising a rigid plate and a rod joined to said plate, said rod extending along an axis of actuation, said plate having a substantial area in surface-to-surface contact with said diaphragm to support the central portion of the diaphragm and transmit force from said diaphragm developed by differential pressure between the two chambers, said rod passing through said rod aperture, said plate being normal to said rod;

spring bias means biasing said plunger in the direction of said first chamber;

conductive means facing axially into said second chamber, unitarily movable with said plate, and lying within the area defined by said plate;

first contact means disposed in the axial path of said conductive means, comprising a resilient, deflectible spring having a free end adapted to be contacted by said conductive means;

contact mount means mounted to said peripheral wall for axially selectible adjustable positioning thereon, including a free flange projecting laterally away from said peripheral wall, and supporting said first contact means in the path of said conductive means, said free flange being resilient, whereby said first contact means and contact mount means exert only resilient response to contact by said conductive means within the anticipated normal and abnormal range of axial movement of said plunger; and

circuitry and circuit connections with said conductive means and contact means to indicate whether they are in contact with one another or not.

4,642,604

AUXILIARY LUBRICATION PUMP APPARATUS

Herbert C. Glesmann, Omaha, Nebr., and Ronald G. Thomas, Nashville, Tenn., assignors to Remco, Omaha, Nebr.

Filed Jan. 22, 1985, Ser. No. 693,659

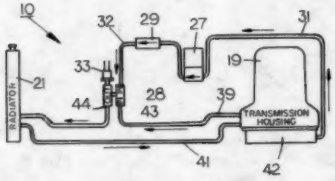
Int. Cl.[4] B60Q *1/00*

U.S. Cl. 340—60 **5 Claims**

1. An auxiliary lubrication pump apparatus for use with a towing vehicle having an engine switch, a battery, and an interior compartment, and a towed vehicle having an automatic transmission which requires forced lubrication while being towed, the apparatus comprising:

(a) a lubrication pump;

(b) a transmission to pump hose connected between said automatic transmission and said lubrication pump;
(c) a valve having at least one signal output and two inputs;
(d) a hose means for connecting an output of said lubrication pump to one of said inputs of said valve;
(e) a first outflow hose for connecting said automatic transmission to another input of said valve;
(f) a second output hose for connecting said output of said valve to said automatic transmission;



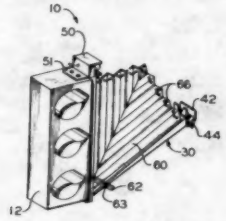
(g) pressure sensing means positioned to sense pressure as regards said second outflow hose; and
(h) control means responsive to said pressure sensing means and having switch means for providing electricity to said lubrication pump and to provide an alarm whenever said control means detects through said pressure sensing means that inadequate pressure exists.

4,642,605

POWER FAILURE RESPONSIVE WARNING DEVICE

S. Joel Karp, 1828 Boulevard, West Hartford, Conn. 06107

Filed Mar. 3, 1986, Ser. No. 835,176
Int. Cl.[4] G08B *5/24*
U.S. Cl. 340—130 **19 Claims**



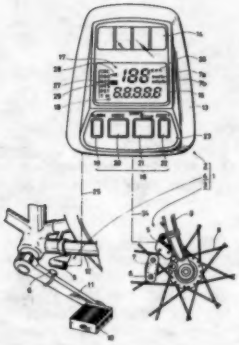
1. A warning device responsive to an electrical power interruption at a given location to activate a warning signal comprising:
elongated support means adapted to be mounted for disposition in a generally upright orientation;
elongated arm means pivotally mounted at a first end thereof to said support means, said arm means being pivotal between a first generally upright position wherein said support means and arm means are generally parallelly oriented and cooperate to form an enclosure and a second warning position wherein said arm means projects away from said support means to open the said enclosure;
flexible carrier means having first and second edge portions, said first edge portion being connected in fixed relationship to said support means and said second edge portion being connected in fixed relationship to said arm means, said carrier means being substantially entirely enclosed in said enclosure when said arm means is in the first position, said carrier means being extended to define a support for a visual display when said arm means is in said second position; and
latch means for holding said arm means in said first position in response to the presence of electricity at a given location, said latch means being responsive to interruption of the supply of electrical power to said given location to release said arm means for pivotal movement to the second warning position.

4,642,606

DATA DISPLAY UNIT FOR A BICYCLE

Sadaharu Tsuyama, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Japan

Filed Jan. 18, 1985, Ser. No. 692,930
Claims priority, application Japan, Jan. 20, 1984, 59-6736[U]
Int. Cl.[4] G01P *3/48, 3/54;* B62J *3/00, 6/00*
U.S. Cl. 340—134 **10 Claims**



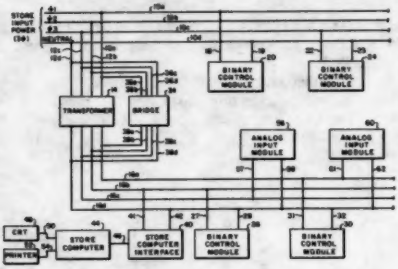
1. A running data display unit for a bicycle, comprising:
wheel revolution detecting means located in association with a wheel of a bicycle in a manner in which no load is applied to said wheel, said wheel revolution detecting means providing pulse signal according to the number of revolutions of said wheel;
running data calculating means coupled to said revolution detecting means, by which running data including the running speed, the running distance, the average speed, and the maximum speed of a bicycle are calculated based on said pulse signal provided from said revolution detecting means;
running data calculation start and stop selecting means coupled to said running data calculating means for starting or stopping the calculation of running data by said running data calculating means;
liquid crystal display means coupled to said running data calculating means for selectively displaying the running data calculated by said running data calculating means, a speed unit in association with said running data being displayed in said display means;
speed unit display winking means coupled to said liquid crystal display means and said start and stop selecting means, by which winking of light in said speed unit display is started in response to the start of measurement selected by said start and stop selecting means and said winking of light in said speed unit display is stopped in response to the stop of measurement selected by said start and stop selecting means; and
power supply means for applying energy to said running data supply unit.

4,642,607

POWER LINE CARRIER COMMUNICATIONS SYSTEM TRANSFORMER BRIDGE

Stephen A. Strom; Kenneth W. Schnuelle, and William E. Potwora, all of Tempe, Ariz., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 6, 1985, Ser. No. 762,881
Int. Cl.⁴ H04M *11/04*
U.S. Cl. 340—310 A **4 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 42 Pages)



1. A powder line carrier communications system transformer bridge/repeater for receiving on a power line communications network a series of original message bit streams generated by a transmitting module and for relaying on said power line communications network corresponding relayed message bit streams to receiving modules, comprising:

transceiver means connected to means for converting said relayed message bit streams from serial binary bit streams to frequency-shift keyed bit streams and for converting original message bit streams from frequency-shift keyed bit streams to serial binary bit streams;

transformer means connected to said transceiver means for amplifying received original message bit streams provided to said transceiver means;

isolation means connected to said transformer means and adapted for connection to a power line having a plurality of differently phased lines, said isolation means coupling said original message bit stream to said transformer means from said power line and coupling said relayed message bit streams from said transformer means to said power line; and

processor means connected to said transceiver means and responsive to certain predetermined ones of said original message bit streams for generating corresponding relayed message bit streams.

4,642,608

DIGITAL-TO-ANALOGUE CONVERTER ARRANGEMENT

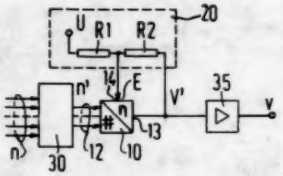
Jean-Pierre Tomasi, Les Molieres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1985, Ser. No. 705,938
Claims priority, application France, Mar. 2, 1984, 84 03280
Int. Cl.⁴ H03K *13/00*
U.S. Cl. 340—347 DA **7 Claims**

1. A digital-to-analogue converter arrangement comprising a digital-to-analogue converter circuit of a type producing at its output an output voltage V'(n') such that:

$$V'(n') = k \cdot E \cdot \frac{n'}{M'}$$

where k is a constant, E is a voltage applied to a reference voltage input of the digital-to-analog converter circuit, n' is a binary number applied to a binary signal input of the digital-to-analog converter circuit and M' is the maximum value n' can attain, a negative feedback network coupled between the output of the digital-to-analogue converter circuit and the reference voltage input thereof, and a transcoding means coupled to



said binary signal input and which, from a number "n" whose maximum value may reach M, adjust a number "n'" such that there is a "pseudo-linear" relationship between the number "n" and the voltage V':

$$V'(n_p) = K \cdot \frac{n_p}{M}$$

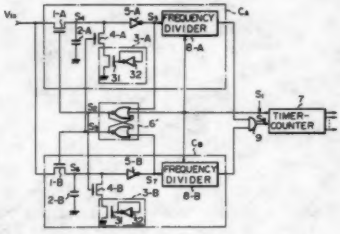
where K is a constant and n_p are the specific values of n.

4,642,609

INTEGRATION TYPE ANALOG-TO-DIGITAL CONVERTER HAVING CONTINUOUSLY CHARGING AND DISCHARGING FUNCTIONS

Jyoji Murakami, and Kenzi Yamada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 380,699, May 21, 1982, abandoned.
This application Dec. 24, 1984, Ser. No. 685,953
Claims priority, application Japan, May 28, 1981, 56-79991
Int. Cl.⁴ H03M *1/54*
U.S. Cl. 340—347 AD **5 Claims**



1. An analog-to-digital converter operatively connectable to receive a start signal, comprising:

at least two charging and discharging circuits, each charging and discharging circuit comprising:

a charging switch for inputting an analog voltage and having an on state;

a capacitor, operatively connected to said charging switch, charged during the on-state of said charging switch;

a constant current source, operatively connected to said capacitor, for discharging the charges stored in said capacitor;

a discharging switch, operatively connected between said capacitor and said constant current source, for activating said constant current source;

a detection circuit, operatively connected to said capacitor, for detecting whether the voltage of said capacitor reaches a predetermined value; and

counter means, operatively connected to said detection circuit, for counting the number of times said predetermined value is detected by said detection circuit and for generating an output signal when the number reaches a predetermined number;

a control circuit, operatively connected to said detection circuit, said charging switch, and said discharging switch of each said charging and discharging circuit, for controlling said charging switch and said discharging switch, the charging and discharging operations being performed alternately and continuously upon each charging and discharging circuit; and

a timer-counter, operatively connected to said counter means of each said charging and discharging circuit and operatively connectable to receive the start signal, initiated in response to the start signal and stopped in response to the output signal of said counter means from each said charging and discharging circuit.

4,642,610

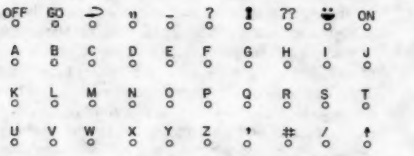
COMMUNICATIONS APPARATUS FOR HANDICAPPED INDIVIDUALS

William N. Smith, III, P.O. Box 1061, Carrollton, Tex. 75006

Division of Ser. No. 385,016, Jun. 4, 1982, Pat. No. 4,517,423. This application Jun. 26, 1984, Ser. No. 624,746

Int. Cl.[4] G08B *7/06*

U.S. Cl. 340—365 S **13 Claims**



1. An improved method for selecting an element of a group, comprising the steps of:

(a) serially scanning the elements of the group at a first rate faster than the response time of the user;

(b) stopping said serial scanning step upon receipt of a first input signal;

(c) reverse scanning the group elements at a second rate slower than the response time of the user; and

(d) stopping said reverse scanning step upon receipt of a second input signal, selecting said element of the group.

4,642,611

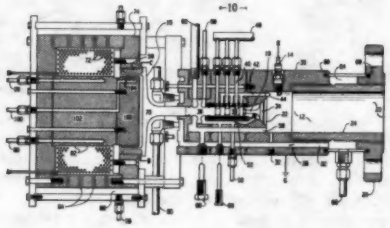
SOUND ENGINE

Andre F. Koerner, 11706 Nobililty Cir., Stafford, Tex. 77477

Filed Oct. 14, 1983, Ser. No. 542,053

Int. Cl.[4] G01V *1/04, 1/57;* **G08B** *9/00*

U.S. Cl. 340—385 **9 Claims**



1. A sound engine comprising:

a firing chamber having a sound outlet;

igniting means mounted to said firing chamber;

valve means mounted to said firing chamber, said valve means permitting the controlled introduction of a fuel and a gas to said firing chamber, said valve means comprising:

an air valve fitted to an opening adjacent said firing chamber, said air valve movable relative to said opening;

a fuel shuttle valve connected to said air valve such that movement of said air valve imparts a movement to said fuel shuttle valve; and

blowback control means attached to said firing chamber said blowback control means including a piston fastened to said fuel shuttle valve, said blowback control means for equalizing pressures acting on said air valve;

electromagnetic means connected to said valve means;

a source of electrical signal impulses connected to said electromagnetic means, said electromagnetic means for causing movement of said air valve and said fuel shuttle valve, said air valve and said fuel shuttle valve moving in correspondence to said electrical signal impulses; and

output means connected to said sound outlet to provide a sound output from said firing chamber.

4,642,612

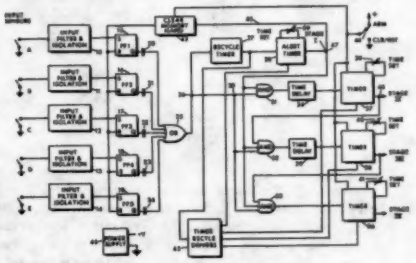
INTRUDER DETECTION AND DETERRENT SYSTEM

Herschel W. Crump, 117 Yuchi Trail North, Fort Worth, Tex. 76108

Filed Jun. 18, 1984, Ser. No. 621,704

Int. Cl.[4] G08B *13/00*

U.S. Cl. 340—541 **9 Claims**



1. An intruder deterrence system for protecting enclosed premises, said system comprising:

at least three sensors arranged to be placed incrementally along a path of probable ingress of a potential intruder into the protected premises;

said sensors adapted to emit an electrical signal upon passage thereby by any person;

latching means connected to the signal output of each said sensor and arranged to generate a signal and then latch-over upon receiving the first signal generated by said sensor, and further adapted to thereafter prevent additional signals from said sensor being passed through said latching means until said latching means is reset;

an OR gate means having inputs operably connected to the signal outputs of all of said latching means, and a signal output;

a first staged response circuit connected operably to the output of said OR gate means and having timing means therein including an adjustable timer with a signal input and a signal output, for generating after a predetermined period a first staged response signal in response to a signal received from said OR gate means;

a second staged response circuit comprising a dual AND gate function having signal inputs operably connected to said OR gate and said first staged response signal, and having timing means therein arranged to generate a time delayed signal output in response to a signal input generated by said second staged circuit AND gate means; and,

at least one additional staged response circuit comprising an AND gate means having signal inputs numerically coinciding with and operably connected to the staged response signals of all preceeding staged response circuits plus said OR gate means signal ouput, and said additional staged response circuits each having timing means arranged to generate a time-delayed output signal after receiving an input signal from said circuit's AND gate means;

wherein said second and successive staged response output signals are further adapted to initiate noticeable responses in and around the protected premises in response to the possible intrusion.

4,642,613

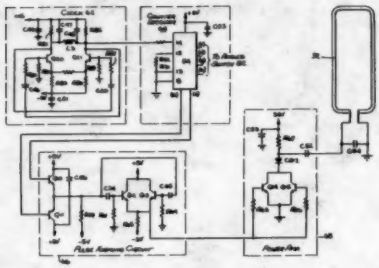
ELECTRONIC THEFT DETECTION APPARATUS WITH RESPONDER ELEMENTS ON PROTECTED ARTICLES

Peter A. Pokalsky, East Meadow, N.Y., assignor to Knogo Corporation, Hicksville, N.Y.

Filed Mar. 16, 1984, Ser. No. 590,346

Int. Cl.[4] G08B *13/24*

U.S. Cl. 340—572 **14 Claims**



1. In an electronic theft detection apparatus for detecting the unauthorized movement of protected articles through a passageway, said apparatus comprising a transmitter for producing electromagnetic waves in said passageway, electronic responder circuits constructed and arranged to be mounted on protected articles and to produce a characteristic disturbance of said electromagnetic waves when one of said articles is present in said passageway and a receiver constructed and arranged to sense the occurrence of said characteristic disturbance of said electromagnetic waves when one of said articles is present in said passageway and to produce an alarm in response thereto, the combination of a transmitter antenna connected to said transmitter and a receiver antenna connected to said receiver, one of said antennas comprising a loop of an electrically conductive, non magnetic, self supporting material and the other antenna comprising an electrically conductive wire loop supported by said self supporting material.

4,642,614

FLUID FLOW MONITORING SYSTEM

John F. Cook, St. Louis County, Mo., assignor to McNeil Corporation, St. Louis, Mo.

Continuation of Ser. No. 565,718, Dec. 27, 1983, abandoned. This application Apr. 11, 1986, Ser. No. 850,946

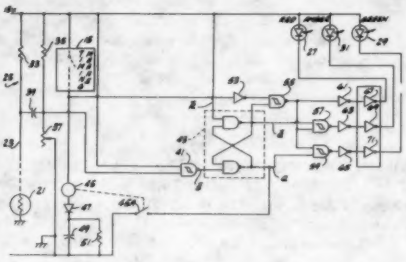
Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—608 **20 Claims**

1. A system for monitoring flow of fluid in a passage in a fluid distribution system wherien, in normal operation, intermittent deliveries are made through the passage, with off periods of no-flow between said deliveries, said monitoring system being operable to monitor said distribution system to determine whether a delivery has occurred within a period within which a delivery should occur in normal operation, and comprising:

a thermistor in said passage connected in a circuit for being energized and thereby heated, said thermistor being in heat-exchange relation with fluid in said passage so that, on a delivery of fluid through the passage, the thermistor is cooled thereby for increasing its electrical resistance, means for establishing periods during each of which a normal delivery of fluid should occur through the passage, and

a monitoring circuit interconnected with the thermistor and said period establishing means having fault signal means therin and means operable in response to occurrence of any of said periods without an increase in the electrical



resistance of the thermistor due to cooling of the thermistor in response to a normal delivery of fluid during that period to actuate said fault signal means at the termination of said period, said circuit being conditioned in response to an increase in the electrical resistance of the thermistor due to cooling of the thermistor in each of said periods during which a normal delivery of fluid occurs to refrain from actuating said fault signal means at the termination of said period, said circuit being non-responsive to a decrease in the electrical resistance of the thermistor due to heating of the thermistor.

4,642,615

LIGHT-SCATTERING TYPE SMOKE DETECTOR

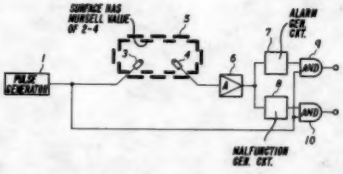
Takashi Suzuki, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan

Filed Jul. 11, 1985, Ser. No. 754,025

Claims priority, application Japan, Jul. 31, 1984, 59-159215; May 28, 1985, 60-113158

Int. Cl.[4] G08B *17/10*

U.S. Cl. 340—630 **4 Claims**



1. A light-scattering type smoke detector which comprises a dark chamber of a labyrinth structure, a light-emitting element and a light-receiving element provided in the dark chamber at positions where the light beam from the light-emitting element does not directly impinge on the light-receiving element; wherein the light-receiving element detects the existence of smoke by sensing the scattering of light caused by minute particles of smoke entering the dark chamber and generates an alarm, said detector including means for detecting malfunctions of said light-receiving element; wherein the Munsell

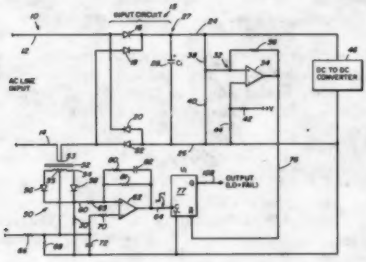
value of lightness of the inside surface of the dark chamber is in the range of 2–4.

4,642,616

METHOD AND APPARATUS FOR DETECTION OF AC POWER FAILURE CONDITIONS

Peter A. Goodwin, Wayland, Mass., assignor to Prime Computer, Inc., Natick, Mass.

Filed Feb. 14, 1985, Ser. No. 701,574
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—654 **12 Claims**



1. Apparatus for detecting an AC power failure condition comprising

a fast attack, slow decay energy storage circuit means for receiving an AC input signal and for providing a slowly decaying output based upon at last received peak voltage value,

a voltage threshold means for providing a voltage failure condition signal when the decaying output of said storage circuit means crosses a predetermined threshold voltage value,

a current detection circuit for detecting a flow of current to said storage circuit means, said current detection circuit including means for generating a current detection condition signal in response to said detection of said flow of current, and

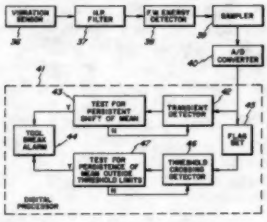
a pulse-prediction circuit for providing a current failure signal upon the absence of said detection of said flow of current.

4,642,617

ACOUSTIC TOOL BREAK DETECTION SYSTEM AND METHOD

Charles E. Thomas, Scotia; Minyoung Lee, Schenectady; James F. Bedard, Schenectady, and Steven R. Hayashi, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1984, Ser. No. 685,005
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—680 **10 Claims**



1. An acoustic monitoring system to detect cutting tool break events while machining a workpiece on a machine tool comprising:

a broadband vibration sensor which generates an electrical signal representing vibrations at the tool-workpiece interface;

an analog preprocessor including means to discriminate against lower frequency machinery noise and to detect the signal energy in an acoustic frequency band below 100 KHz;

means for sampling the output signal of said analog preprocessor and converting each sample to a digital value;

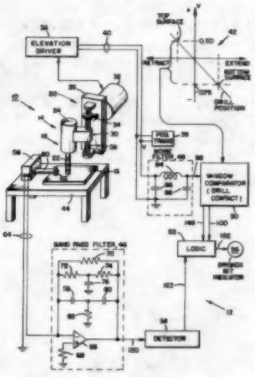
digital pattern recognition circuitry to detect tool break events that produce gradually occurring, substantial changes in cutting conditions, comprising means for calculating the running mean signal level of N samples, means for determining when the cutting noise and mean signal level drops below a lower break detection threshold which is just above the continuous traverse noise level of said machine tool, and means for generating a tool break alarm after counting a preset number of low level cutting noise samples below the lower threshold.

4,642,618

TOOL FAILURE DETECTOR

Eric A. Johnson, Vestal, and Lynn A. Price, II, Endicott, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Jul. 23, 1985, Ser. No. 757,897
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—683 **14 Claims**



1. A tool failure detection system for use with machinery comprising a tool ; means for supporting a workpiece in an operating region of said tool; and means for advancing said tool toward said workpiece for operating thereon and for providing a signal indicating position of the tool, an operation of said tool upon the workpiece inducing vibrations characteristic of said operation; said

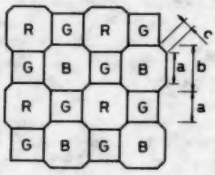
means for sensing said vibrations; means coupled to said sensing means for analyzing said vibrations to determine proper operation of said tool, said analyzing means including means responsive to the position signal for designating when the tool is to be engaged with the workpiece; and

means coupled to said analyzing means for indicating a failure in the operation of said tool.

4,642,619
NON-LIGHT-EMITTING LIQUID CRYSTAL COLOR DISPLAY DEVICE

Seigo Togashi, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1983, Ser. No. 561,350
Claims priority, application Japan, Dec. 15, 1982, 57-219709
Int. Cl.[4] G09G 3/36
U.S. Cl. 340—701 **4 Claims**

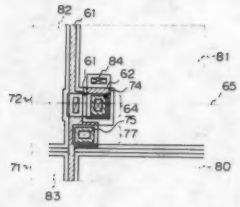


1. In a color display device of the type having a plurality of light-transmissible picture elements for red, green and blue and means for selectively driving each element according to picture signals, wherein the improvement comprises:
the number of picture elements for green on the entire display being larger than each of the other picture elements for red and blue on the entire display,
the total intensity of transmitting light in the green picture elements being equal to each of the other picture elements,
the surface of each picture element for green being square and the surface of each of the other picture elements being octagonal, and
the picture elements for green being disposed in a checkered arrangement interposing the other picture elements.

4,642,620
MATRIX DISPLAY DEVICE

Seigo Togashi, and Kanetaka Sekiguchi, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 536,105
Claims priority, application Japan, Sep. 27, 1982, 57-167944; Sep. 27, 1982, 57-167945
Int. Cl.[4] G09G 3/02
U.S. Cl. 340—713 **22 Claims**

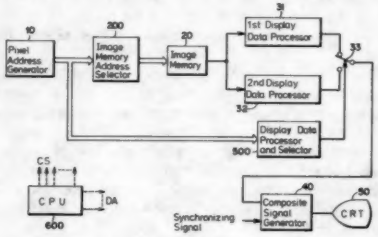


1. A matrix display device comprising:
a plurality of row electrodes and column electrodes;
a plurality of display elements;
a plurality of non-linear resistance elements;
connecting electrode means for coupling said non-linear resistance elements and display elements, and;
drive signal generating means for applying drive signals to said row electrodes and column electrodes;
each of said non-linear resistance elements comprising at least one pair of sets of rectifier elements formed by a thin film deposition process on a substrate of said matrix display device, each of said rectifier elements comprising a semiconductor portion having a multi-layer configuration comprising at least a first semiconductor layer doped with a predetermined impurity concentration level and a second semiconductor layer having a substantially lower impurity concentration level than said first semiconductor layer and disposed overlapping said first semiconductor layer, said semiconductor layers of the thin film rectifier elements comprising amorphous silicon, with one rectifier element set of each of said pairs being connected in parallel with the other set of said pair, said sets in each pair being connected with mutually opposing polarities, and each of said display elements being connected in series with at least one of said non-linear resistance elements between one of said row and column electrodes;
the rectifier element sets of each of said pairs thereof being formed on said substrate with an electrically symmetrical configuration, such that electrical currents respectively generated in said pair of rectifier element sets due to the effects of light or heat will mutually cancel.

4,642,621
IMAGE DISPLAY SYSTEM FOR COMPUTERIZED TOMOGRAPHS

Kayoko Nemoto, and Takeshi Ohya, both of Tokyo, Japan, assignors to Yokogawa Medical Systems, Limited, Tokyo, Japan

Filed Mar. 27, 1984, Ser. No. 593,878
Claims priority, application Japan, Nov. 29, 1983, 58-225184
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—721 **1 Claim**



1. A computerized tomograph image display system comprising
a display screen for displaying a separate secondary image alone in a selected region of the screen with the remaining regions of the screen displaying only a primary image;
an image memory for storing primary and secondary image data comprising a primary image memory block for storing data of a primary image and one or more secondary image memory blocks for storing data of one or more secondary images, said secondary images being different from said primary image;
a pixel address generator for generating signals designating pixel addresses of the data in said image memory;
control means;
image memory address selector, under control of said control means and responsive to signals from said pixel generator, for selectively determining addresses of inset regions on said display screen and for generating and inputting to said image memory a signal indicative of the addresses of said inset regions, thereby to switch addresses from primary to secondary memory blocks in the image memory to inset secondary image memory addresses during the time the pixel addresses are in the inset regions;
display data processor means connected to said image memory for processing image data read from said image memory and comprising a first processor for processing image data from said image memory, and at least a second processor for processing image data from said image memory,

and switching means for switching the output processed signals outputted from said first processor and said second processor;

a composite signal generator, under control of said control means and connected through said switching means for obtaining output processed signals from either said first or said second processor, for generating composite video signals which are supplied to operate said display screen; and

display data processor selector, connected to said switching means and under control of said control means and receiving signals from said pixel generator, for determining pixel addresses representative of regions on said screen for selected display of images from signals outputted from a selected one of the first and second processors, and in response to such determination, for selectively operating said switching means to selectively apply output signals outputted respectively from either the first or the second processor to said composite signal generator;

wherein said image memory address selector comprises

a data bus connected to said control means;

an ON-OFF register connected to said data bus for registering data indicative of condition for switching ON and OFF said secondary image display on said screen;

a plurality of address registers connected to said data bus and having designated therein one or more addresses in said primary image memory block;

a discriminating means, connected to said pixel address generator and to said primary address registers, for discriminating addresses in said primary image memory block by comparing the output of said plurality of address registers and the output of said pixel address generator and generating thereby an output discriminating signal;

one or more secondary address generators connected to said data bus, each having designated therein addresses in said one or more secondary image memory blocks; and

address selecting means, connected to said pixel address generator, said secondary address generators, and said discriminating means, for selecting image memory addresses among the output of said pixel address generator and the output of said one or more secondary address generators, based on the output discriminating signal from said discriminating means, and for supplying the selected primary or secondary image addresses to said image memory; and

wherein said display data processor selector comprises

data bus connected to said control means;

display data processing ON-OFF register for registering data indicative of the condition for switching ON and OFF said display data processing;

a plurality of primary address registers connected to said data bus and having designated therein one or more addresses in said primary image memory block; and

discriminating means, connected to said pixel address generator and to said primary address registers, for discriminating an address in said primary image memory block by comparing the output of said plurality of primary address registers and the output of said pixel address generator and for generating a switching signal, said switching signal selectively operating said switching means to connect the output of either said first or said second processor to said composite signal generator.

4,642,622

VIDEO SIGNAL GENERATING CIRCUIT

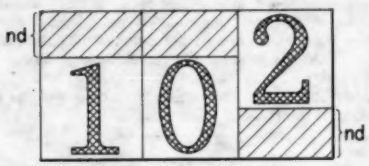
Syoichi Ito, Ibaraki, and Ken-ichi Akahori, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

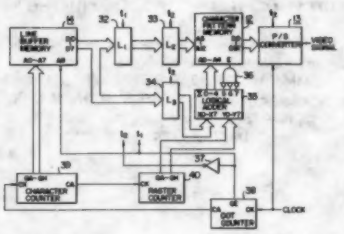
Filed Apr. 4, 1983, Ser. No. 481,937

Claims priority, application Japan, Apr. 5, 1982, 57-55410

Int. Cl.⁴ G09G 1/06

U.S. Cl. 340—724 **11 Claims**





1. A video signal generating circuit for generating a video signal representative of character pattern data to be produced on a page line, comprising:

a character pattern memory containing a plurality of different character patterns stored therein, each of said character patterns being stored in bit data form in a predetermined number of scan lines, said character pattern memory having a first address input portion for selecting one of the stored character patterns and a second address input portion for selecting one of the scan lines for the selected character pattern;

buffer memory means supplied with and storing character codes of characters to be produced in at least one page line, said buffer memory means having control data previously stored therein for controlling the respective vertical positions of the characters to be produced, which control data includes position data for the respective character patterns stored in said character pattern memory, each of said character codes read from said buffer memory means forming an address signal which is applied to said first address input portion of said character pattern memory to select one of the character patterns in said character pattern memory corresponding to the character to be produced and is also applied to said buffer memory means as an address signal to selectively read out one of the position data corresponding to the read character code; and

a control circuit for controlling the sequential reading of the character codes from said buffer memory means, the sequential reading of the control data corresponding to the read character codes from said buffer memory means and the sequential reading of the character pattern data from said character pattern memory, said control circuit including logical operation means for performing a predetermined logical operation using the control data read from said buffer memory means to produce a first signal which is applied to said second address input portion of said character pattern memory for selecting one of the scan lines in the selected character pattern and a second signal which indicates whether or not the reading of the

selected character pattern data from said character pattern memory should be enabled, a dot counter for counting the number of dots per character to be contained in one of the raster scan lines included within one page line to be produced, a character counter for counting the number of characters to be included within the page line, and a raster counter for counting the number of the raster scan lines within the page line, and wherein said logical operation means has a logical adder for producing a logical sum of the control data read from said buffer memory means and an output of said raster counter and a logical gate for receiving a predetermined bit portion of the output of said logical adder to produce said second signal, the remaining bit portion of the output of said logical adder being applied to said second address input portion of said character pattern memory as said first signal.

4,642,623

TELEVISION-TYPE INTERLACED DISPLAY DEVICE AND DIGITAL OSCILLOSCOPE COMPRISING SUCH A DEVICE

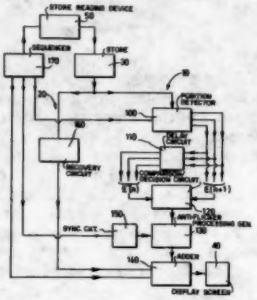
Pierre J. C. Dureux, Corbeil-Essonnes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,571

Claims priority, application France, Apr. 16, 1982, 82 06589; Mar. 16, 1983, 83 04281

Int. Cl.⁴ G09G *1/06*

U.S. Cl. 340—728 **4 Claims**



1. A television-type interlaced display device in which a displayed signal includes scanning lines, alternate lines of which appear in one field and intervening lines of which appear in a following field, said display device comprising processing means, associated with segments (P) located on a line in a first field, for suppressing the effect of light fluctuations of segments of a light trace to be displayed, said processing means generating further parallel anti-flicker segments (I) which are located in two lines, respectively, of a second field following said first field, which two lines enclose the line in said first field containing said segments (P), characterized in that said display device further comprises means coupled to said processing means for making said processing means operative only when the occurrence of situations corresponding to the presence of horizontal sections in said light trace in one field, is detected.

4,642,624

WIDTH CARD

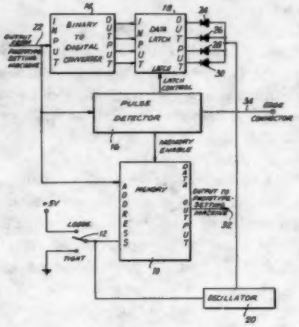
Leonard Storch, New York, N.Y., and Robert Hotto, Pacific Beach, Calif., assignors to Leonard Storch Enterprises, Inc., New York, N.Y.

Filed Jan. 10, 1984, Ser. No. 569,784

Int. Cl.⁴ B41B *17/04*; G09G *1/16*

U.S. Cl. 340—735 **8 Claims**

1. A width card associated with a film strip containing a pluralilty of fonts each of said fonts containing a plurality of characters, said width card and said film strip adapted to be used with a phototypesetting machine, comprising a memory for storing a first set and a second set of character width information for each of said fonts contained on said associated film strip, means for permitting the selection of either said first set or said second set of character width information for all of said fonts contained on said associated film strip, means for permitting said phototypesetting machine to obtain from said memory the width information for a character in a particular font by accessing the selected set of character width information for the particular font from said memory, and means responsive to access of said memory by said phototypesetting machine for providing a visual indication of the particular font accessed and the set of character width information selected.



4,642,625

GRAPHIC PROCESSOR FOR COLOR AND POSITIONAL DATA OF AN IMAGE TO BE DISPLAYED

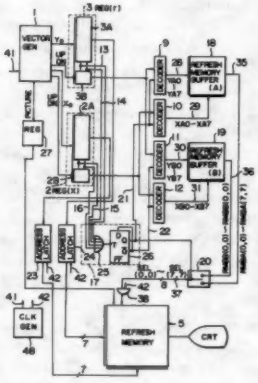
Takashi Tsunehiro, Yokohama, and Shigeo Tsujioka, Higashiyamoto, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,267

Claims priority, application Japan, Dec. 10, 1982, 57-215422

Int. Cl.⁴ G09G *1/14*

U.S. Cl. 340—747 **23 Claims**



1. A graphic processor comprising:

first means for outputting X- and Y-coordinates indicative of the display position of each of a plurlity of dots forming a pattern to be displayed, and for outputting color data of

said pattern, said pattern being divided into a matrix of unit areas;

second means connected to said first means for holding said color data;

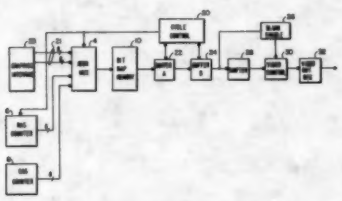
buffer means responsive to said X- and Y-coordinates from said first means for successively storing data indicative of the respective positions of a line of dots included in a unit area of said pattern; and

refresh memory means, connected to said second means and said buffer means and having a plurality of memory areas each assigned to a respective unit area of said pattern, for storing color data for the picture elements forming the display face of a display device, said memory areas being addressable so that said color data received from said second means is stored in memory area selected according to said data indicative of the positions of a line of dots included in said unit area as stored in said buffer means and within the selected memory area at the storage location assigned to said unit area of the pattern.

4,642,626
GRAPHIC DISPLAY SCAN LINE BLANKING CAPABILITY

Kenneth E. Bruce, Nashua, N.H., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 17, 1984, Ser. No. 650,940
Int. Cl.⁴ G09G *1/16*
U.S. Cl. 340—750 **4 Claims**



1. In a computer display system having a text and graphics display capability for displaying text and graphics on a scan line basis, a scan line blanking apparatus for selectively blanking of the graphics display comprising:

(a) a bit map memory for storing electronic signals representative of information to be displayed on said display, and further storing enabling bits utilized in controlling said blanking apparatus;

(b) controller means responsive to said bit map memory for controlling the display of the information in said bit map memory, on said display; and,

(c) blanking means responsive to enable bits stored in said bit map memory for either enabling the display of a portion of the information in said bit map memory, or blanking a portion of the information stored in bit map memory and preventing information from appearing on the display.

4,642,627
ILLUMINATED COMPACT CONTROL SURFACE

Roy F. Hodsdon, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

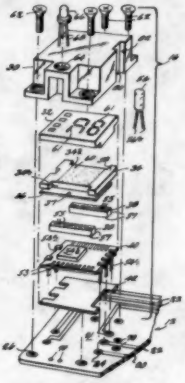
Filed Mar. 13, 1984, Ser. No. 589,000
Int. Cl.⁴ G09G *3/18*
U.S. Cl. 340—765 **27 Claims**

1. A top-mounted control surface for a personal radio transceiver of the type including electrical circuits for establishing communications with a further physically-distinct communications device, said control surface including:

light source means, electrically coupled to said electrical circuits, for emitting light in response to an electrical signal applied thereto;

liquid crystal display means, electrically coupled to said electrical circuits and mounted on a top surface of said transceiver, for selectively changing light transmittance in response to electrical signals applied thereto;

a reflecting assembly mounted substantially parallel to the display means, said assembly including means defining a reflective surface, and a layer of transparent material disposed on said reflective surface between said reflective surface and said display means, said layer defining an irregular surface opposing said display means and spaced a predetermined distance therefrom;



keypad means, electrically connected to said electrical circuits, for controlling the operation of said electrical circuits in response to manipulation by a human operator, said keypad means at least in part defining said transceiver top surface;

said light source means directing a first portion of the light produced thereby into the space between said display means and said irregular surface to strike said irregular surface at a high angle of incidence; and

said light source means directing a second portion of the light produced by said light source means toward said keypad means to illuminate said keypad means.

4,642,628
COLOR LIQUID CRYSTAL DISPLAY APPARATUS WITH IMPROVED DISPLAY COLOR MIXING

Mitsuhiro Murata, Ianaski, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1985, Ser. No. 745,774
Claims priority, application Japan, Jun. 22, 1984, 59-127543; Jun. 22, 1984, 59-127544; Aug. 28, 1984, 59-178792
Int. Cl.⁴ G09U *3/36*
U.S. Cl. 340—784 **6 Claims**

1. A color liquid crystal display apparatus, comprising :

a color liquid crystal display unit having a matrix array of liquid crystal display elements with scanning electrodes and data electrodes, and a matrix array of red, green and blue color filters positioned in correspondence with said liquid crystal display elements, said red, green and blue color filters being arrayed along each row of said matrix such as to be arranged in respectively different sequences in mutually adjacent rows;

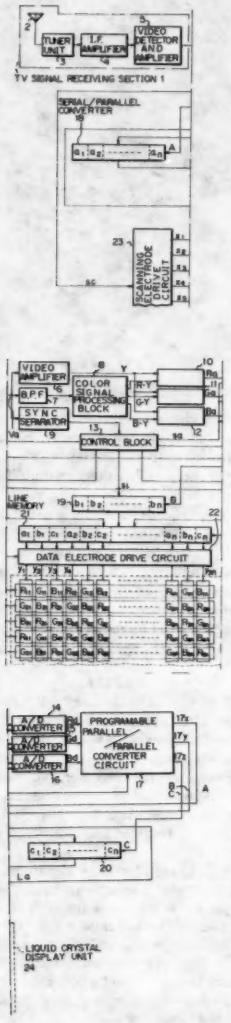
a data electrode drive circuit for applying drive signals to said data electrodes and a scanning electrode drive circuit for sequentially selecting rows of said display element matrix by applying drive signals to said scanning electrodes;

a line memory for storing display data for successive ones of said rows of display elements and for applying said data to said data electrode drive circuit;

a control section for producing a plurality of control and

timing signals including signals for controlling sequential driving of said scanning electrodes whereby each of said liquid crystal display element rows is driven in accordance with said display data during a corresponding horizontal scanning interval of fixed duration during each of successive frame intervals;

a source of successively produced sets of parallel R (red), G (green) and B (blue) digital color signals each comprising



at least one bit and constituting said display data for a mutually adjacent set of liquid crystal display elements in a row of said matrix;

selection switch control means having a plurality of output terminals and having a plurality of input terminals coupled to receive said R, G and B digital color signals from said source thereof, and responsive to control signals produced by said control section for transferring respective ones of said R, G and B digital color signals from said input terminals to specific ones of said output terminals in accordance with the status of display matrix row selection, and;

signal shifting circuit means coupled to receive said R, G and B digital color signals from said output terminals of said selection switch control means, and acting to arrange said R, G and B digital color signals, successively output in parallel from said output terminals during each of said horizontal scanning intervals, in a fixed array sequence during said each horizontal scanning interval;

said line memory being responsive to one of said timing signals from said control section for storing said sequentially arrayed contents of said signal shifting circuit means therein at the termination of said each horizontal scanning interval.

4,642,629

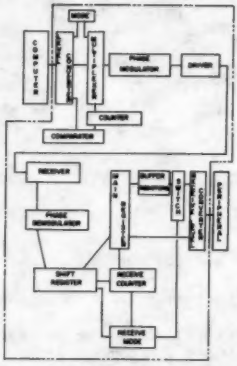
ENHANCED DISTANCE DATA TRANSMISSION SYSTEM

James H. Milligan, Shoreview, Minn., assignor to Megabit Communications, Inc., Little Canada, Minn.

Continuation-in-part of Ser. No. 486,427, Apr. 18, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 596,858

Int. Cl.[4] H04Q *1/00*

U.S. Cl. 340—825 **20 Claims**



1. A logic system for transferring digital data between parallel channel digital data external devices, said logic system having a first end equipped with an incoming parallel channel and an outgoing parallel channel interfaced with a first said parallel channel external device, and a second end equipped with an incoming parallel channel and an outgoing parallel channel interfaced with a second said parallel channel external device, each said end of said logic system being equipped with a serialization means for serializing into serial form bytes of parallel channel digital data signals incoming to said logic system, a transmission means for transmitting the serial form of incoming parallel digital data signals to the other end of said logic system, and a converting means for converting serial form digital data signals transmitted thereto from the other end of said logic system into parallel form, said logic system being further characterized by the fact that it consists of said first and second ends opposite each other and transmission media linking said ends together, and by the fact that features of said ends include:

mode setting means within the first end for effecting the formation of distictive mode digital signals for each different digital data message handling mode of said logic system, there being more than one possible said message handling mode for said entire logic system, one being termed a first said message handling mode, and another being termed a second said message handling mode, said

first message handling mode being the normal message handling mode for said entire logic system, said mode setting means including a means for establishment at least said second message handling mode by combining signals from predetermined locations in a parallel byte of digital data signals incoming to said first end from said first external device,

means for including said mode digital signals in a transmission by said first end transmission means to said second end,

decoding means within said second end for processing said mode digital signals transmitted to said second end so as to effect the formation of signals for conforming said second end to the message handling mode set by said first end,

buffer means within the second end, effectively placed in operation only under said second message handling mode, for temporarily storing a predetermined type of digital data signals transmitted to said second end from said first end,

monitoring means within the first end, effectively placed in operation only under said second message handling mode, for monitoring the availability of digital data signal storage space in said buffer means at said second end, and

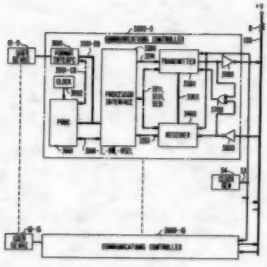
facilitating means within the first end, effectively placed in operation under said second message handling mode, for generating within said first end a return signal or signals from a portion of the parallel channel digital data signals incoming from the first external device and for returning said return signal or signals back to said first external device to facilitate further output of parallel channel digital data signals by said first external device during the times said monitoring means indicates said buffer means has storage space available.

4,642,630

METHOD AND APPARATUS FOR BUS CONTENTION RESOLUTION

Mark W. Beckner, Warrenville, and Thomas J. J. Starr, Wheaton, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1982, Ser. No. 453,929
Int. Cl.⁴ H04Q 1/00
U.S. Cl. 340—825.5 **16 Claims**



1. A system for communicating among a plurality of user devices via a bus, said system comprising a plurality of communications controllers each comprising

transmitter means for selectively coupling at least one of said plurality of user devices to said bus to transmit information in frames, each frame including a priority field and

receiver means comprising means for monitoring said bus and means for storing priority fields conveyed on said bus and

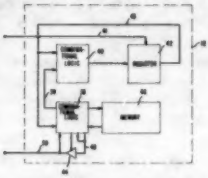
wherein the transmitter means of a first communications controller further comprises means responsive to a request signal from a first user device and to a priority field of a first frame presently being conveyed on said bus, said priority field of said first frame being stored by the receiver means of said first communications controller, for coupling said first user device to said bus to preemtively transmit, before the completion of said first frame, a second frame having a higher priority than the priority indicated by said priority field stored by said receiver means of said first communications controller.

4,642,631

INTERACTIVE SECURITY SYSTEM

Stanley C. Rak, 72711 Belair Rd., Palm Desert, Calif. 92260

Continuation of Ser. No. 667,377, Nov. 1, 1984, abandoned. This application Feb. 12, 1986, Ser. No. 829,461
Int. Cl.⁴ H04Q 1/00
U.S. Cl. 340—825.31 **30 Claims**



1. An interactive security system for controlling access, comprising:

conditional state means for cycling through a sequence of logic states with a first logic state varying as a function of the present state of said conditional state means, said conditional state means having an input for receiving control signals, at least one output and monitoring means for evaluating the condition of said at least one output and a conductor connected thereto;

means for applying control signals to said input and for receiving signal information from said at least one output; said means for applying responsive to signal information of one condition from said output to apply a first logic level to said conductor connected to said at least one output and apply additional control signals to said input and responsive to signal information of another condition to apply additional control signals to said input, said monitor means acting in the presence of said first logic level to place said conditional state means in an initial condition to cause a sequence of logic states to be read in response to said control signals;

means for storing a predetermined state signal;

means for comparing;

means for establishing bi-directional communication between said conditional state means and said means for comparing, said conditional state means being removable from said bi-directional communication means,

said means for comparing receiving a state signal produced from said removable conditional state means, comparing said produced state signal to said stored predetermined state signal, and enabling access in response to the production of a proper sequence of logic states as indicated by said comparison of said produced state signal to said stored state signal.

4,642,632
DIGITAL PAGING SYSTEM HAVING BIT RATE SWITCHING MEANS AND DIGITAL PAGING RECEIVER THEREFOR

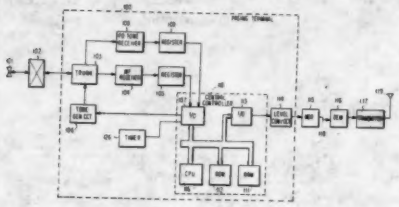
Takashi Ohyagi, and Yoshio Ichikawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,820

Claims priority, application Japan, Oct. 15, 1982, 57-155820[U]

Int. Cl.⁴ H04Q *7/00*

U.S. Cl. 340—825.44 **10 Claims**



1. A paging receiver comprising:

receiving means for receiving a carrier wave which is modulated with a paging signal including first coded pulse sequences of a first transmission rate and second coded pulse sequences of a second transmission rate, said first and second transmission rates differing from each other, said first and second coded pulse sequences including first and second predetermined bits, respectively, said second pulse sequences bring comprised of a first codeword and n codewords following said first codeword, n being zero or a positive integer, said second pulse sequence further including third predetermined bits which follow said second predetermined bits and represent the number of said n codewords;

demodulating means for demodulating the received carrier wave;

low-pass filter means coupled to the output of said demodulating means for switching the first cut-off frequency thereof to the second one to pass said second coded pulse sequences when said first means receives a first control signal and switching said second cut-off frequency to said first one to pass said first coded pulse sequences when said filter means receives a second control signal; and

data processing section means coupled to the output of said low-pass filter means for generating said first control signal at the end of said first coded pulse sequences when said first coded pulse sequences coincide with a third coded pulse sequence unique to said paging receiver, generating said second control signal at the end of said second coded pulse sequences in response to the reception of said second predetermined bits and in accordance with the content of said third predetermined bits, and decoding the passed first and second coded pulse sequences.

4,642,633
INDIVIDUAL SIMULCAST STATION CONTROL SYSTEM

Stephen H. Dunkerton, Riverwoods, Ill.; Gary R. Reynolds, Twin Falls, Id.; Scott G. Chapman, Schaumburg, and Gary D. Erickson, Mt. Prospect, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1983, Ser. No. 520,790

Int. Cl.⁴ H04B *7/00;* **H04Q** *7/00*

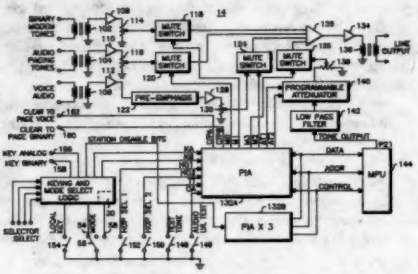
U.S. Cl. 340—825.76 **7 Claims**

1. A remote control system for selective control of particular transmitters in a simulcast transmission system, said system receiving signals from a paging terminal and combining paging information with transmitter control information, said remote control system comprising:

(a) encoding means for encoding transmitter control information and paging information in a predetermined sequence, wherein said transmitter control information comprises a series of transmitter inhibit tones;

(b) linking means coupled to said encoding means for transferring said encoded information from said encoding means;

(c) individual decoding means, located at each particular



transmitter, coupled to said linking means for decoding said encoded transmitter control information, said decoding means detecting the presence of said series of transmitter inhibit tones and generating a disabling transmitter control signal in response thereto; and

(d) transmitter means coupled to said decoding means for transmitting said encoded paging information, wherein said transmitter is further responsive to said disabling transmitter control signal for inhibiting the transmission of said encoded paging information if said control signal is present.

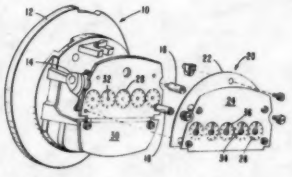
4,642,634
OPTICAL ENCODER

Edward J. Gerri, Riverdale, N.J., and David P. Eisenhauer, Greer, S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 18, 1984, Ser. No. 651,721

Int. Cl.⁴ G08C *19/16*

U.S. Cl. 340—870.02 **21 Claims**



1. Encoding apparatus secured to and for use with a utility meter having at least one dial register carried on a shaft and arranged to be responsive to registering of energy consumption, said apparatus comprising

clock means,

at least one modular assmebly having at least one dial register axially corresponding and operably coupled to the dial register of the utility meter and having a slotted wheel for movement with the dial register of the modular assembly,

radiation source means and means for sensing the radiation source means,

means operably associated with the modular assembly for interrupting beams of radiation from said radiation source means,

means responsive to detection by the radiation sensing means of interruption of the beams of radiation for outputting signals, and

programmable means including a serial communications link enabling at least one of a plurality of metering functions to be performed at times set by said clock means for converting the output signals into code form for transmission thereof to a facility remote from the utility meter.

4,642,635

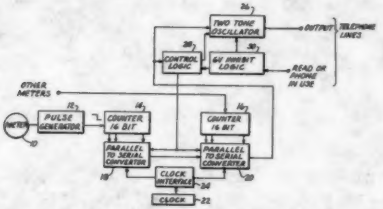
REMOTE METER READING SYSTEM

Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107

Continuation-in-part of Ser. No. 326,020, Nov. 30, 1981, abandoned. This application Jun. 29, 1984, Ser. No. 626,207

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 379—107 **12 Claims**



1. A remote meter reading system for reading meters over unconventional lines such as telephone lines or the like comprising:

digital pulse generating means for generating a digital pulse representing incremental movements of said meter;

connecting means connecting such digital pulse generating means to said meter;

counting means for counting the pulses from said digital pulse generating means;

storage means for storing the counts from said counting means;

scanning means for scanning said storage means and converting said counts stored in said storage means to digital information for transmission over said phone lines;

logic detection means for detecting the logic state of the output from said storage means;

tone generating means connected to said logic detecting means;

said tone generating means generating a plurality of tones in a predetermined frequency range representing logic zero or logic one;

whereby usage recorded by a utility meter may be remotely read.

4,642,636

METHOD AND APPARATUS FOR AUTO-CALIBRATION OF SIGNAL CONDITIONING ELECTRONICS

John R. Smith, Monroeville; Thomas J. Kenny, Pittsburgh; Kingsley F. Graham, Murrysville; James A. Neuner, Richland Township; Douglas A. Bauman, Monroeville; Timothy F. Thompson, Pittsburgh; William W. Wassel, Penn Township; Dhulipala M. Rao, Pittsburgh, and David G. Theriault, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 552,232, Nov. 16, 1983, abandoned. This application Dec. 30, 1983, Ser. No. 567,456

Int. Cl.⁴ H04Q *9/00*; **G05B** *23/02*

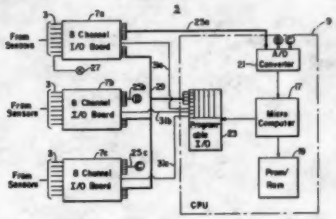
U.S. Cl. 340—870.04 **20 Claims**

1. Apparatus for conditioning and calibrating a raw electrical signal comprising:

a printed circuit board having an input termination for said raw electric signal, a conditioning circuit connected to the input termination for conditioning the raw electrical signal to generate a conditioned electrical signal and an output termination for outputting the conditioned electrical signal;

test means for selectively disconnecting the conditioning circuit from the input termination and for connecting test signals of known magnitude to the conditioning circuit;

processing means connected to said output termination, for calibrating the conditioning circuit by controlling said test means to connect said test signals to said conditioning circuit to generate conditioned test signals, generating a calibration factor as a function of said test signals and said conditioned test signals, operating said test means to reconnect said raw electrical signal to said conditioning circuit so that said conditioned electrical signal again appears on said output termination and applying said calibration factor to said conditioned electrical signal to generate a calibrated conditioned electrical signal; and



monitoring means including temperature sensing means for sensing the temperature of said conditioning circuit, said processing means being responsive to the temperature sensed by said sensing means to perform said calibration when said temperature changes by a preselected amount since the last calibration.

4,642,637

METHOD FOR TRANSMITTING DATA VIA A LINE OF AN ALTERNATING CURRENT DISTRIBUTION NETWORK, AND A TRANSMITTER FOR CARRYING OUT THE METHOD

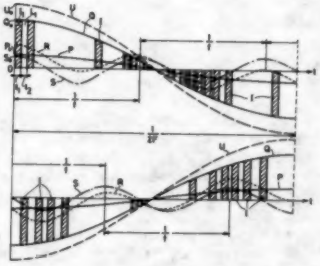
Hanspeter Baer, Uster, Switzerland, assignor to Zellweger Uster, Ltd., Uster, Switzerland

Filed Aug. 20, 1985, Ser. No. 767,597

Claims priority, application Switzerland, Aug. 27, 1984, 4077/84; Apr. 3, 1985, 1445/85

Int. Cl.⁴ H04M *11/04*

U.S. Cl. 340—870.19 **27 Claims**



1. A method for transmitting data via a line of an alternating current distribution network, in which a current signal carrying the data to be transmitted is generated and input into the network, comprising the steps of generating a current signal as a load signal by periodically connecting a load to a voltage source of the distribution network via a switch repeatedly for

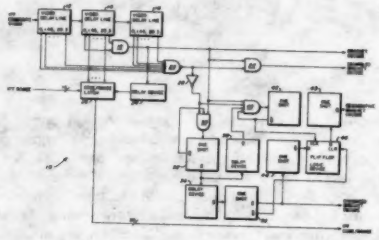
short time intervals in order to transmit on the line of the distribution network a series of current pulses whose times of generation and/or duration are such that the resulting transmitted current signal corresponds at least approximately to a desired theoretical signal of predetermined frequency, and modulating said transmitted current signal with data to produce said current signal carrying the data to be transmitted.

4,642,638

APPARATUS FOR GENERATING ENHANCED/REGENERATIVE BRACKET DECODE SIGNALS

Patrick O. Callahan, Jr., Lusby, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 27, 1983, Ser. No. 507,658
Int. Cl.[4] G01S *13/75*
U.S. Cl. 342—45 **7 Claims**



1. An apparatus for generating enhanced and regenerative bracket decode signals from IFF composite video, and for detecting the proper number of replies from the IFF composite video regardless of their spacings, comprising:

a first video delay line for receiving and delaying the IFF composite video a predetermined amount;

a second video delay line operatively connected at its input to said first video delay line for additionally delaying the delayed IFF composite video the same predetermined amount;

a third video delay line operatively connected at its input to said second video delay line for still additionally delaying the twice delayed IFF composite video still the same predetermined amount;

a bracket decode AND gate operatively connected at its input to two taps of said second video delay line, the two taps having predetermined delay spacings such that the output of said bracket decode AND gate is a bracket decode signal;

a degarbled bracket decode NOR gate operatively connected at its input to predetermined taps of said first and third video delay lines for generating a "kill junction" signal at its output from the code information at its input;

a degarbled bracket decode AND gate operatively connected at its input to the output of said bracket decode AND gate and said degarbled bracket decode NOR gate for ANDing the bracket decode signal and the "kill junction" signal at its input to product a degarbled bracket decode signal;

an inverter operatively connected to the output of said degarbled bracket decode NOR gate for inverting the "kill junction" signal thereat;

enhanced bracket decode means operatively connected at its input to the output of said inverter and said bracket decode AND gate for generating an enhanced bracket decode signal from the inverted "kill junction" signal and the bracket decode signal; and

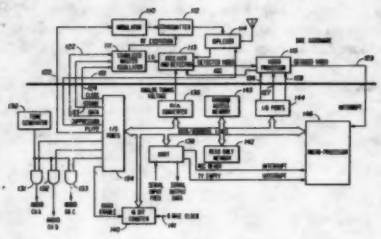
regenerative bracket decode means operatively connected at its input to the output of said inverter, said bracket decode AND gate and said enhanced bracket decode means for generating a regenerative bracket decode signal.

4,642,639

MULTICHANNEL DME RANGING SYSTEM

David A. Nelson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 30, 1983, Ser. No. 537,879
Int. Cl.[4] G01S *13/76*
U.S. Cl. 342—47 **7 Claims**



1. An apparatus for identifying at least three distance-measuring equipment ground stations substantially simultaneously and for decoding distance information from each of said stations, in rapid cyclical sequence, comprising:

a. means for detecting first, second, and third pulsed signals from said ground stations, respectively, in sequence and in a cyclical manner, wherein said pulsed signals contain coded identifying information individual to each ground station and have a first timing characteristic, and distance information having a second timing characteristic substantially shorter than said first timing characteristic; and

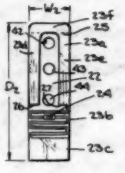
b. means for operating said means for detecting, and coupled thereto, at a cyclical frequency approximately an order of magnitude faster than said first timing characteristic, and for maintaining each cyclical period at least long enough to obtain valid distance information, on the order of said second timing characteristic, at least once for each of said stations in each cyclical period.

4,642,640

SIGNAL RECEPTOR-RERADIATOR AND SURVEILLANCE TAG USING THE SAME

Charles W. Woolsey, Deerfield Beach; Ezra D. Eskandry, Miami, and George G. Pinneo, Ft. Lauderdale, all of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Apr. 25, 1983, Ser. No. 488,077
Int. Cl.[4] G01S *13/80*
U.S. Cl. 342—42 **7 Claims**



1. A signal receptor-reradiator component for operation in a surveillance system, said component comprising in combination an antenna frame and a semiconductor small-signal diode, said antenna frame being formed of electrically conductive material providing from a first end to a second end a continuous conductive path except for a gap located at an intermediate

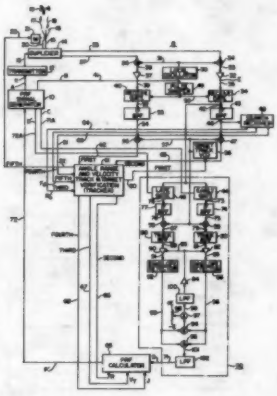
point across which is connected said diode, said path commencing at said first end having a first width that remains substantially constant for a first distance, whereupon said path narrows substantially to a second width substantially less than said first width and continues with substantially said second width past said gap and for a distance beyond said gap exceeding the distance covered by said second width preceding said gap, whereupon said path widens again and continues thus widened to said second end to provide an enlarged portion having a surface area different from the surface area of the path over said first distance and having no transverse dimension as small as said first width, said path being folded to be wholly contained within an outer boundary that encircles an area of no more than 2 square inches.

4,642,641

VARIABLE PRF TARGET TRACKING RADAR

Robert R. Campbell, Towson, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 29, 1976, Ser. No. 709,678
Int. Cl.[4] G01S *13/12*
U.S. Cl. 342—82 **14 Claims**



1. A method of tracking a moving target in a high PRF radar mode wherein initial target range and doppler frequency information is provided, comprising

generating a high PRF signal, said signal being constituted by a series of time spaced pulses,

transmitting said high PRF signal,

repeatedly receiving at least a portion of one of said pulses of target reflected high PRF signal during a predetermined receive time interval between said time-spaced pulses of said high PRF signal being transmitted,

reducing spurious signals in the target reflected high PRF signal below a predetermined level which are incidentally generated by modulation of the main beam clutter, said modulation results from receiving during said predetermined receive time intervals,

tracking the doppler frequency of said target reflected signals to provide a signal indicative of target velocity,

generating a target range signal indicative of the present target range utilizing said initial range, target velocity signal and the time lapsed from the time of the initial range measurement,

repeatedly comparing the arrival of one of said pulses of a target reflected high PRF signal with said predetermined receive time interval to provide an early/late signal indicative of whether said pulse of a target reflected high PRF signal is centered with respect to said predetermined receive time interval,

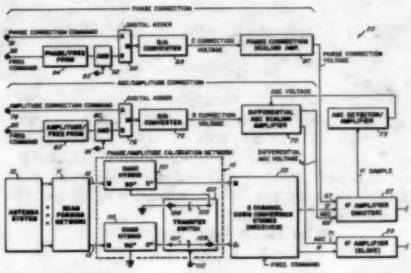
varying the PRF of said high PRF signal by calculating a new PRF based upon said target range, target velocity and early/late signal to align said pulses of said target reflected signal towards the center of said predetermined receive time intervals.

4,642,642

ADAPTIVE MONOPULSE PHASE/AMPLITUDE CALIBRATION CORRECTION SYSTEM

Stephen J. Uurtamo, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 29, 1984, Ser. No. 665,897
Int. Cl.[4] G01S *7/40*
U.S. Cl. 343—165 **11 Claims**



11. A method of phase/amplitude calibration correction in an adaptive monopulse system comprising the steps of:

receiving a desired signal in an antenna system and beam forming network portion of the monopulse system, said portion of the monopulse system supplying a pair of output signals in response to the reception of the desired signal;

connecting one of the pair of output signals, unchanged in phase, to one input of a receiver having dual channels and an input for each channel;

shifting the phase of the one output signal, by approximately 90° and connecting it to the second input of the receiver;

adjusting phase and amplitude of at least one of the dual channels until an output indicative of azimuth angle is at a null and an output indicative of the difference in amplitude between the dual channels is at a null; and

disconnecting the phase shifted one output signal from the second input of the receiver and connecting the other of the pair of output signals to the second input.

4,642,643

NOISE JAMMER DISCRIMINATION BY NOISE SPECTRAL BANDWIDTH

Carl D. Wise, Severna Pk., and Frank W. Hays, Ellicott City, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 7, 1984, Ser. No. 618,288
Int. Cl.[4] G01S *7/36*
U.S. Cl. 342—14 **3 Claims**

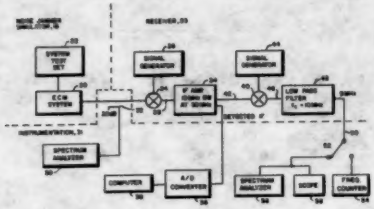
1. A method of distinguishing between multiple noise jammer sources having different noise spectral bandwidths comprising the steps of:

(a) detecting noise signals emitted by a selected noise jammer source by means of a receiver having a narrow bandwidth compared to the potential minimum spectral bandwidth of said noise signals;

(b) forming noise pulses as said noise signals from said noise jammer source sweep through the bandwidth of said receiver;

(c) determining the average duty cycle of said noise pulses; and

(d) characterizing the noise spectral bandwidth from said duty cycle and from the known bandwidth of said receiver to uniquely identify said selected noise jammer source.

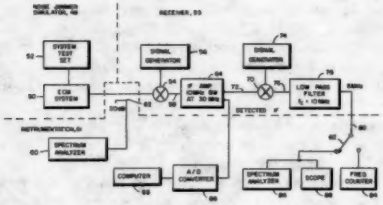


4,642,644

NOISE JAMMER DISCRIMINATION BY NOISE MODULATION BANDWIDTH

Carl D. Wise, Severna Park; Frank W. Hays, Ellicott City, and Thomas K. Lisle, Jr., Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 7, 1984, Ser. No. 618,287
Int. Cl.[4] G01S *7/36*
U.S. Cl. 342—14 **3 Claims**



1. A method of distinguishing between multiple noise jammer sources having different noise modulation bandwidths comprising the steps of:

(a) detecting noise signals emitted by a selected noise jammer source by means of a receiver having a bandwidth substantially the same as the potential minimum spectral bandwidth of said noise signals;

(b) forming noise pulses as said noise signals from said noise jammer source sweep through the bandwidth of said receiver;

(c) determining the dwell time of said noise pulses; and

(d) characterizing the noise modulation bandwidth from said dwell time and from the known bandwidth of said receiver to uniquely identify said selected noise jammer source.

4,642,645

REDUCING GRATING LOBES DUE TO SUBARRAY AMPLITUDE TAPERING

Randy L. Haupt, Ann Arbor, Mich., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 7, 1985, Ser. No. 731,646
Int. Cl.[4] G01S *3/16*; H01Q *3/22*
U.S. Cl. 342—379 **11 Claims**

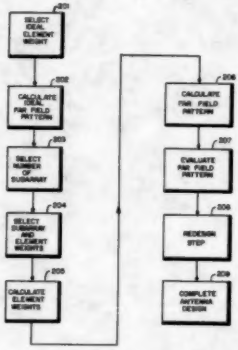
1. In combination with a phased array antenna containing a plurality of antenna elements which may be divided up into groups called subarrays, with each subarray producing an output signal which receives a subarray amplitude tapering before being summed into an array output signal, a process of reducing grating lobes in a far field antenna pattern of said phased array antenna, said grating lobes being caused by said subarray amplitude tapering, said process comprising the steps of:

a first selecting step in which an ideal exact element amplitude taper for all the individual elements in the phased array antenna is selected, said ideal exact element amplitude taper being a distribution of amplitude weights which, if distributed over the plurality of antenna elements, would result in an ideal far field antenna pattern with low sidelobes;

a first calculating step in which the ideal far field antenna pattern resulting from use of said ideal exact element amplitude taper is calculated;

a second selecting step in which the number of subarrays m, each containing n elements, is selected such that the product of (m)×(n) equals N, and N equals the total number of antenna elements in the phased array antenna;

a third selecting step in which a set of subarray amplitude weights (b_m) is selected for each of said m subarrays and a set of individual element weights (a_{mn}) is selected for



each of the N antenna elements in the phased array antenna such that the product of (b_m)×(a_{mn}) approximately equals $A_{(mn)}$ where $A_{(mn)}$ equals the value of the ideal exact element amplitude taper for each of the individual antenna elements selected in the first selecting step;

a second calculating step, in which a calculation is made for a value, a set of actual element amplitude weights, such that each nth actual element amplitude weight is identical for corresponding elements in an identical subarray and is given by a set $a'_{(mn)}$ where each nth element amplitude weight in the set $a'_{(mn)}$ is obtained by averaging the value of each corresponding nth element amplitude of said set of individual element weights $a_{(mn)}$ selected in said third selecting step; and

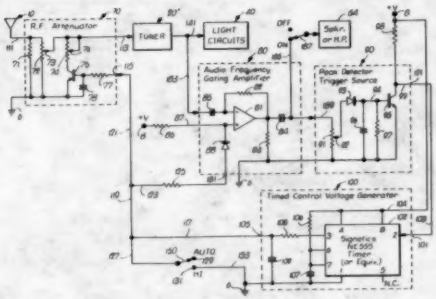
an antenna design completion step which adjusts said phased array antenna's design to include the set of subarray amplitude weights (b_m) and actual element amplitude weights $a'_{(mn)}$ obtained in said second calculating step to produce a configuration that reduces the gating lobes in the far field antenna pattern caused by the subarray amplitude tapering while simplifying said phased array antenna's design by containing groups of identical subarrays.

4,642,646

AUTOMATIC SENSITIVITY ADJUSTMENT AND AUDIO MUTING FOR AIRCRAFT MARKER BEACON RECEIVER

Noel A. Rogers, 9121 W. 70th St., Shawnee Mission, Kans. 66204

Filed Jun. 12, 1984, Ser. No. 619,808
Int. Cl.⁴ G01S *1/04*
U.S. Cl. 342—407 **7 Claims**



1. In an aircraft marker beacon receiving and indicating system adapted to respond automatically to proximity of aircraft to beacon and having an antenna for picking up signals in the nature of a radio frequency carrier wave amplitude modulated at a distinctive audio frequency characteristic of the ground-based beacon from which said signals are being transmitted and of an amplitude varying with the disposition of said antenna relative to said beacon, a radio receiver provided with an input terminal adapted to be coupled with said antenna and including means for receiving, amplifying and demodulating said signals to provide an output of said audio frequency at an output terminal of said receiver, audio transducer means adapted to be coupled with said output terminal of said receiver for audibly reproducing said output, and optical indicating means adapted to be coupled with said output terminal of said receiver for visually displaying an aspect of said output, the improvement of which comprises:

radio frequency attenuator means having a radio frequency signal input terminal, a radio frequency signal output terminal and a control voltage input terminal, said attenuator means being operable to attenuate radio frequency signals passing from said signal input terminal thereof to said output terminal thereof by a predetermined amount when a control voltage is applied to said control input terminal thereof and to pass said radio frequency signals without substantial attentuation when said control voltage is not applied to said control terminal thereof;

audio frequency signal gating means having an audio frequency input terminal, an audio frequency output terminal and a control voltage input terminal, said gating means being operable to block passage of audio frequency signals from said signal input terminal thereof to said signal output terminal thereof when a control voltage is applied to said control input terminal thereof and to permit said signals to pass from said signal input terminal thereof to said signal output terminal thereof when said control voltage is not applied to said control input terminal thereof;

audio frequency signal amplitude responsive, trigger signal producing means having an audio frequency signal input terminal and a trigger signal output terminal, said producing means being operable to produce a trigger signal at said output terminal thereof only when the amplitude of audio frequency signals applied to said input terminal thereof is of at least a predetermined level;

trigger signal responsive, timed control voltage generating means having a trigger signal input terminal and a control voltage output terminal, said generating means being operable to generate at said output terminal thereof a control voltage for a predetermined period of time only in response to the application of a trigger signal to said trigger signal input terminal thereof;

means for coupling said antenna with said input terminal of said attenuator means;

means for coupling said output terminal of said attenuator means with said input terminal of said receiver;

means for coupling said output terminal of said receiver with said optical indicating means;

means for coupling said output terminal of said receiver with said signal input terminal of said gating means;

means for coupling said output terminal of said gating means with said audio transducer means;

means for coupling said output terminal of said gating means with said signal input terminal of said producing means;

means for coupling said output terminal of said producing means with said trigger signal input terminal of said generating means;

means for coupling said control voltage output terminal of said generating means with said control voltage input terminal of said attenuator means; and

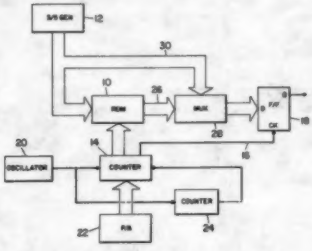
means for coupling said control voltage output terminal of said generating means with said control voltage input terminal of said gating means.

4,642,647

SIGNAL GENERATOR FOR RADIO NAVIGATION SYSTEM

Mark A. Sturza, Woodland Hills; Wayne L. Knitter, Chatsworth, and Yi-Zen Wu, Woodland Hills, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 29, 1983, Ser. No. 527,124
Int. Cl.⁴ G01S *1/10*; H04B *7/19*; H04L *25/38*
U.S. Cl. 342—415 **5 Claims**



1. A multiple code generator for use in a radio navigation system of the type wherein location is determined in accordance with multiple spatially-distributed radio frequency signal fixings, each of said signal fixings comprising a radio frequency signal of preselected coding, said code generator comprising, in combination:

a. a read only memory for storing a plurality of bit sequences, each of said sequences comprising a predetermined code of said navigation system;

b. means coupled to said read only memory for accessing preselected bit sequences;

c. means for applying a predetermined bit rate and phase shift to said sequences, said means including a counter; and

d. means for outputting said preselected bit sequences.

4,642,648

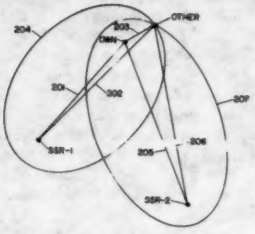
SIMPLE PASSIVE/ACTIVE PROXIMITY WARNING SYSTEM

Burton L. Hulland, Glenwood Landing, and George B. Litchford, Northport, both of N.Y., assignors to Litchstreet Co., Northport, N.Y.

Continuation-in-part of Ser. No. 351,275, Feb. 22, 1982, Pat. No. 4,486,755. This application Mar. 14, 1984, Ser. No. 589,524

Int. Cl.[4] G01S 3/02

U.S. Cl. 342—455 **38 Claims**



1. A proximity warning system for an Own station, comprising:

(a) means for selectively enabling the production and transmission of interrogation messages at Own station at least in part in response to the SSR environment sensed at Own station;

(b) means for producing from received interrogation messages transmitted by SSRs within operational range of said Own station and received reply messages transmitted by transponder-equipped Other stations in response to said SSR interrogation messages during a predetermined period following reception of each said interrogation message at Own station, a differential time of arrival value for each of said Other stations with respect to each of said SSRs;

(c) means for producing from received reply messages transmitted by said Other stations in response to said interrogation messages from Own station during a predetermined period following transmission of each said interrogation message from Own station, a direct time of arrival value for each of said Other stations with respect to Own station;

(d) means for selecting from among the several most recent time of arrival values produced by means (b) if any and by means (c) if any, the largest time of arrival value associated with each of said Other stations that has been substantially duplicated a predetermined number of times; and

(e) means for producing a threat alert output in response to any time of arrival value selected by means (d) that is below a predetermined value.

4,642,649

PASSIVE RANGING METHOD AND APPARATUS USING INTERFEROMETRIC SCANNING

Fred M. Lightfoot, Burton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1983, Ser. No. 537,498

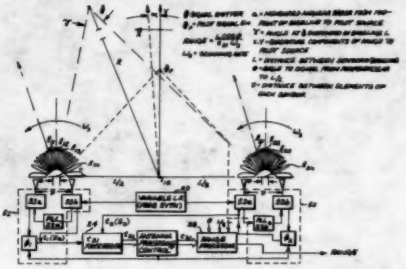
Int. Cl.[4] G01S 3/14

U.S. Cl. 342—458 **16 Claims**

14. In an apparatus for determining the range R of a distant source Φ of radio frequency emission from a monitoring platform that has first and second directional sensors mounted on the platform at space locations separated by baseline of length L, and has scanning means for synchronously scanning the first and second directional sensors at a scan rate w_s across a field containing the source Φ to cause the sensors to produce reception signals responsive to source Φ that have a time differential t_{21} from which the range R is computed, the improvement is said apparatus wherein:

said first and second sensors comprise radio frequency interferometers formed by an array of multiple antenna elements in which each of the first and second thusly formed interferometer sensors exhibit a gain pattern of multiple, substantially equal strength, finger-like lobes extending generally radially outward from a center of the sensor;

wherein said scanning means comprises electronic steering circuit means coupled to said multiple antenna element to cause said patterns of multiple lobes associated with each



of said first and second interferometer sensors to move in synchronism relative to said platform to scan across the filed in which source Φ is located; and

pilot signal source mounted on said platform at a fixed distance from said first and second interferometer sensors, and wherein said scanning means includes means for phase-lock synchronization of the signals developed by said first and second sensors to a pilot signal emitted by said pilot signal source.

4,642,650

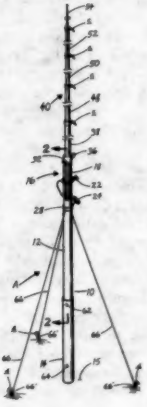
PORTABLE HF ANTENNA

Thomas M. Morton, 4926 Odell St., St. Louis, Mo. 63139

Filed Dec. 7, 1984, Ser. No. 679,373

Int. Cl.[4] H01Q 1/10, 9/18

U.S. Cl. 343—745 **11 Claims**



1. A vertical-type asymmetrically loaded dipolar transmitting and receiving antenna of portable, easily deployed, telescopingly collapsible character usable over a wide range of operating frequencies, comprising:

a tubular base for forming one electrical end of the antenna;

a mast telescopingly received by the base for forming the

opposite electrical end of the antenna, the mast being formed of multiple tubular sections each of progressively smaller diameter in the direction away from the base for each being extended and secured in sequence for mast erection, each mast section being electrically conductive for operation over the entire range of operating frequencies;

the base presenting at its upper end a coil form carrying an inductive coil constituted by conductor turns wound serially about the coil form;

clamp means carried at the upper end of the coil form for receiving a portion of the length of a lowermost section of the mast and for clampingly engaging such mast section portion for maintaining the mast in erected condition, the claim means being electrically conductive and connected to an upper end of the coil for thereby connecting the upper end of the coil to the lowermost mast section, the clamp means permitting user adjustment of the length portion of the lowermost mast section received by the clamp means, at least part of said length portion being telescopingly received by the upper end of the base for providing a capacitance of preselected value between the lowermost mast section and the upper end of the base;

feedpoint means carried at an upper end of the base including first terminal means electrically interconnected with the upper end of the base for providing a first feedpoint connection to the upper end of the base and second terminal means including a top connected to a selected turn of the coil along its length for providing a user-adjustable second feedpoint connection to the selected turn, and whereby the coil imposes an inductance of preselected value, determined by the selected turn, between the second terminal means and the lowermost mast section;

the coil form being constituted by a dielectric sleeve of tubular configuration having a lower portion telescopingly received by the upper end of the base for providing dielectric isolation between said portion of the mast section length and the upper end of the base, the coil form having an upper portion extending above the upper end of the base for carrying the turns of the coil; and

means for mounting the base in upstanding orientation;

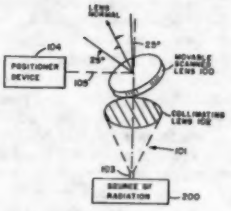
whereby the inductance and capacitance together provide a user-adjustable matching network for electrically matching the dipolar antenna to the feedline over said range of operating frequencies.

4,642,651

DUAL LENS ANTENNA WITH MECHANICAL AND ELECTRICAL BEAM SCANNING

Donald H. Kuhn, North Syracuse, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 24, 1984, Ser. No. 653,645
Int. Cl.[4] H01Q *3/02, 19/06*
U.S. Cl. 343—754 **1 Claim**



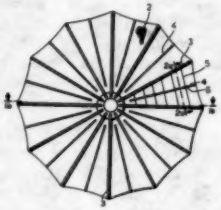
1. A system comprising a movable electronic scanned lens; a source of electromagnetic energy located spatially from said lens; said source of electromagnetic energy spatially feeding said energy to said lens; a collimation lens located between said source of electromagnetic energy and said scanned lens so as to collimate the electromagnetic energy to said scanned lens; said scanned lens reradiating said energy to a predetermined portion of space by a combination of electronic scanning and mechanical movement of said scanned lens; said movable scanned lens being made of an array of phase shifter modules with antenna elements on both ends of each module; said collimating lens illuminating the scanned lens with parallel electromagnetic energy rays; and a feedhorn directing said electromagnetic energy onto said collimating lens.

4,642,652

UNFOLDABLE ANTENNA REFLECTOR

Henning Herbig, Holzkirchen; Horst Heinze, Westerham; Franz Drachenberg, Baldham, all of Fed. Rep. of Germany, and Knud Pontoppidan, Copenhagen, Denmark, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 664,043
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 3338937
Int. Cl.[4] H01Q *15/20*
U.S. Cl. 343—915 **11 Claims**



1. An unfoldable antenna reflector for a metallic antenna reflector net, comprising a central carrier body, a plurality of carrier ribs for carrying said reflector net, support means for pivotally securing one end of said carrier ribs to said carrier body so that said carrier ribs are movable between an open substantially radially extending position and a closed substantially axially extending position, a plurality of auxiliary ribs disconnected from said central carrier body and secured to said reflector net, said auxiliary ribs being located so that one or more auxiliary ribs are positioned between adjacent carrier ribs, flexible bracing wires for connecting said auxiliary ribs to said carrier ribs, securing means for operatively connecting one end of each bracing wire to an adjacent carrier rib, adjustable anchoring means operatively securing a respective auxiliary rib to the respective opposite end of a corresponding bracing wire, said bracing wires extending, in the unfolded state of said reflector net, in the direction of a resultant bracing tension force having two bracing tension force components one of which extends substantially perpendicularly to a plane defined by said reflector net in its unfolded state.

4,642,653

MULTI-TONE RECORDING METHOD FOR INK JET PRINTER

Tadashi Ito, Yokohama; Koichiro Jinnai, Kawasaki; Takahisa Koike, Tokyo; Toshiharu Murai, Yokohama; Takao Fukazawa, Tokyo, and Kazumi Ishima, Kashiwa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 669,831, Nov. 9, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 857,395
Claims priority, application Japan, Nov. 9, 1983, 58-210509
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—1.1 **3 Claims**

1. A recording method for a charge control type ink jet

printer which renders halftone by recording data in multiple densities, comprising the steps of:

(a) charging ink drops issuing from an ink ejection nozle in a plurality of steps by a plurality of charging voltages;

(b) deflecting the charged ink drops in a plurality of steps based on an amount of charge deposited on each of the charged ink drops; and

(c) said charging step comprising,

storing in a memory plural sets of halftone data which respectively correspond to a different recording density for a common number of dots in a unit deflection width,

selecting one of said sets of halftone pattern data in correspondence with a desired recording density, and

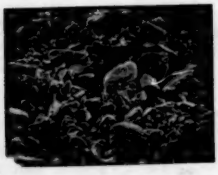
varying the charging voltage within a predetermined range which provides a shift in deflection by a pitch smaller than one dot pitch in a deflection direction in accordance with the selected halftone pattern data, thereby controlling the degree of overlapping or separation of adjacent dots to accomplish recording gradation at least in part based on the shift in deflection by said pitch smaller than one dot pitch.

4,642,654

RECORDING METHOD

Shigeo Toganoh, and Ryuichi Arai, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 674,601, Nov. 26, 1984, abandoned.
This application Apr. 2, 1986, Ser. No. 848,832
Int. Cl.[4] G01D *15/16;* **B32B** *5/16*
U.S. Cl. 346—1.1 **8 Claims**



1. A color recording method comprising the steps of forming liquid droplets of at least two colors of recording liquids and transferring the different color droplets to a receiving member, said receiving member having a support and a receiving layer overlying the support and containing filler particles, wherein the ratio d/D, where d represents the size of the filler particles and D represents the size of the liquid droplets, is in a range of about 0.03 to 0.3.

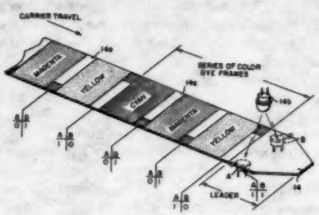
4,642,655

COLOR-INDEXED DYE FRAMES IN THERMAL PRINTERS

Steven J. Sparer, Rochester, and Stanley W. Stephenson, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 14, 1986, Ser. No. 851,748
Int. Cl.[4] G01D *15/10;* **B41J** *3/10*
U.S. Cl. 346—76 PH **6 Claims**

3. A carrier for use in a thermal printer includes a repeating series of spaced yellow, magenta and cyan dye frames having clear interframe areas disposed between dye frames, the improvement comprising:



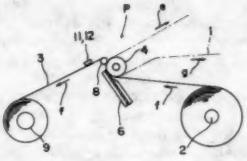
a. a cyan code patch disposed in a portion of the clear interframe between a yellow frame of a series and the cyan frame of the preceding series, which permits the recognition of the yellow frame of this series.

4,642,656

THERMAL PRINTER

Kouji Shibuya, Machida, and Chiharu Imazeki, Yokohama, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1985, Ser. No. 813,766
Claims priority, application Japan, Dec. 27, 1984, 59-281542
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—76 PH **7 Claims**



1. A thermal printer for forming an image by thermally transferring ink from an ink film to transfer paper at a printing station, comprising:

means for supplying said ink film past the printing station;

a takeup roller means for taking up said ink film from said supply means;

takeup roller drive means for exerting a torque to rotate said takeup roller means for taking up said ink film;

a platen roller located at said printing station;

a thermal head located adjacent said platen roller at said printing station;

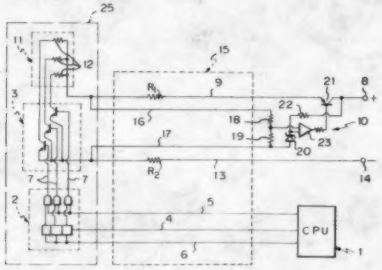
paper feed means for feeding said transfer paper to said printing station between said thermal head and said platen roller and for maintaining said transfer paper in tight contact against said ink film;

means for moving said thermal head between a first position in which said thermal head is in pressing engagement against said platen roller and said transfer paper maintained in tight contact against said ink film and a second position in which said thermal head is out of pressing engagement with said platen roller and said transfer paper maintained in tight contact with said ink film;

control means connected to said drive means for controlling said torque exerted by said takeup roller drive means for rotating said takeup roller means in accordance with said first and second positions of said thermal head, said control means having means for causing a first torque to be exerted on said takeup roller means when said thermal head is in said first position and a second torque to be exerted on said takeup roller means when said thermal

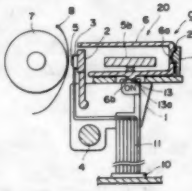
head is in said second position, said first torque being of a smaller magnitude than said second torque.

4,642,657
RECORDER
Osamu Asakura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 27, 1985, Ser. No. 716,385
Claims priority, application Japan, Apr. 4, 1984, 59-67043
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **7 Claims**



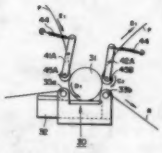
1. A recorder comprising:
recording means having a recording element for recording on a recording medium;
power source means for providing electrical energy;
drive means for enabling electrical energy from said power source to energize said recording element in accordance with a signal;
a carrier movable relative to said power source means and having said recording means and said drive means mounted thereon;
electrical connection means connected at a first end thereof to said power source means and at a second end thereof to said recording means for supplying electrical energy provided by said power source means to said recording element when said recording element is enabled by said drive means; and
regulation means for detecting the voltage proximate to said second end of said electrical connection means and for regulating the electrical energy supplied to said first end of said electrical connection means based on the detection.

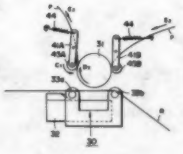
4,642,658
IMAGE FORMING APPARATUS
Junichi Arakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 17, 1985, Ser. No. 809,765
Claims priority, application Japan, Dec. 20, 1984, 59-269876
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **7 Claims**



1. An image recording apparatus for recording on a recording sheet an image corresponding to image information, said apparatus comprising:
a recording sheet mounting portion for mounting the recording sheet on which the image is to be recorded;
an ink sheet mounting portion for mounting an ink sheet having ink thereon;
detecting means for detecting whether the ink sheet is mounted on said ink sheet mounting portion;
image recording means operable for recording the image corresponding to the image information on the recording sheet mounted on said recording sheet mounting portion;
moving means for reciprocally moving said image recording means relative to the recording sheet; and
control means for operating said recording means only during movement thereof in one direction relative to the recording sheeting when said detecting means detects that the ink sheet is mounted and during movement thereof in two directions relative to the recording sheet when said detecting means does not detect that the ink sheet is mounted.

4,642,659
IMAGE BUILDING APPARATUS
Masayoshi Nagashima, Chigasaki; Tomohiko Takahashi, Tokyo; Naoto Higure, Tokyo, and Kanehiro Fukuda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed Feb. 27, 1985, Ser. No. 706,282
Claims priority, application Japan, Feb. 29, 1984, 59-37775
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **15 Claims**





1. An image building apparatus for transferring an image onto a sheet-shaped recording medium, comprising:
image transferring means including a recording head having a contact portion, a rotatable platen roller, holding means for applying a transporting frictional force between the recording medium and said platen roller to convey the recording medium between said platen roller and said recording head, and means for rotating said platen roller in a forward rotational direction and a reverse rotational direction to reciprocably convey the recording medium between said platen roller and said recording head in a forward conveying direction and a reverse conveying direction corresponding, respectively, to said forward and reverse rotational directions of said platen roller, said recording head being movable relative to said platen roller to cause said contact portion of said recording head to come into and out of pressure contact with said platen roller so that an image is built on the recording medium as the recording medium is reciprocably conveyed between said platen roller and said recording head; and
braking means for retaining tension in the recording medium between said platen roller and said recording head by applying a braking frictional force to the recording medium upstream of said contact portion of said recording head with respect to both the forward and reverse conveying directions of the recording medium, said braking

frictional force being less than said transporting frictional force.

4,642,660

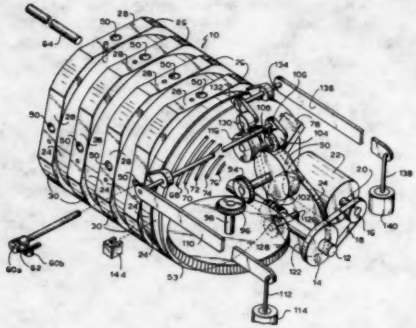
ROTARY DRUM NON-IMPACT PRINTER

Gerald S. Stevens, Jr., Forest Hill; Thomas P. Sapitowicz, Bel Air, both of Md., and Edward D. Davis, Stewartstown, Pa., assignors to General Instrument Corporation, New York, N.Y.

Filed Dec. 26, 1985, Ser. No. 813,380

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **27 Claims**



1. A print head comprising a generally cylindrical member, a plurality of electrically actuatable solid ink spark jet capsules mounted in said member, means for rotating said member, high voltage electrical source means, contact means operably connected to said source means, and means spaced from and movable with said member relative to said contact means, operably electrically connected to said capsules, selected ones of said capsules being operably connected to said source as said member is rotated.

4,642,661

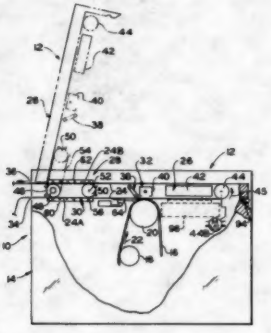
PRINTER WITH DRIVE ON SWINGING PLATFORM

Walter C. Dean, II, Simsbury, Conn., assignor to KCR Technology, Inc., East Hartford, Conn.

Filed Nov. 4, 1985, Ser. No. 794,620

Int. Cl.[4] G01D *15/28*

U.S. Cl. 346—153.1 **16 Claims**



1. For use in a printer for printing a continuous length of paper having a perforated marginal edge, a mechanism comprising

a frame,

a swinging platform mounted for pivoting movement on the frame, and

a bidirectional tractor drive mounted on the platform and engageable with the perforated marginal edge of the paper for driving the paper,

the platform being pivotable between an operative printing position and an inoperative position, the platform in its operative printing position cooperating with the frame in defining a bidirectional paper feed path wherein the paper is fed along said path with first and second paper courses moving in generally opposite directions of travel, the first and second paper courses each being in engagement with the tractor drive, the platform in its inoperative position being in remote relation to the frame to facilitate paper loading and to provide ready access to the paper feed path, and

the bidirectional tractor drive having a power operated drive shaft rotatably supported by the frame and defining a pivot axis for the swinging platform.

4,642,662

CARBONLESS PAPER FOR USE IN LETTER PRINTERS

Takahiro Torii, Hyogo; Mamoru Ishiguro, and Hideaki Senoh, both of Takasago, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

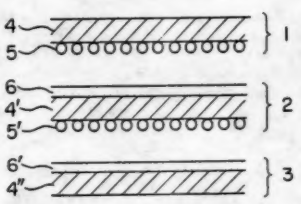
PCT No. PCT/JP84/00017, § 371 Date Sep. 25, 1984, § 102(e) Date Sep. 25, 1984, PCT Pub. No. WO84/02883, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 26, 1984, Ser. No. 662,416

Claims priority, application Japan, Jan. 26, 1983, 58-9158[U]

Int. Cl.[4] B41M *5/22*

U.S. Cl. 346—215 **2 Claims**



1. A carbonless paper used as a pressuresensitive copying paper after having been subjected to printing by a letter printer, which comprises at least one of (a) an upper sheet coated at one side with synthetic high molecular wall membrane microcapsules containing a leuco dye solution, (b) a lower sheet coated with one side with an inorganic solid acid and (c) an intermediate sheet coated at one side with synthetic high molecular wall membrane microcapsules containing a leuco dye solution and at the other side with an inorganic solid acid, said inorganic solid and being semi-synthetic solid acid produced by acid-treating a clay mineral having a layer structure of regular tetrahedrons of silica so that the SiO_2 content becomes 82 to 96.5% on dry basis (drying condition: 105° C. for 3 hr), contacting the acid-treated clay mineral in an aqueous medium with a magnesium and/or aluminum compound which is at least partly soluble in the medium (if this soluble magnesium and/or aluminum compound is not a hydroxide, it is neutralized with an alkali or acid so that the compound is converted to a hydroxide) to introduce magnesium and/or aluminum into the acid-treated clay mineral, and, if necessary, drying the resulting clay mineral.

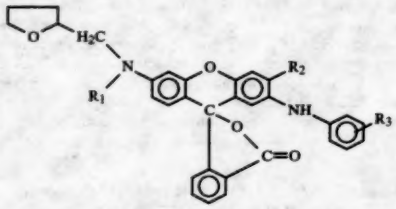
4,642,663
6-TETRAHYDROFURFURYLAMINOFLUORAN COMPOUND USEFUL AS A COLOR FORMER ON AN HEAT SENSITIVE RECORDING SHEET

Hideyuki Sensui, Tokyo; Susumu Suzuka, Yono; Michihiro Gonda, Kitamoto, and Katsumasa Kikkawa, Tokyo, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 693,116, Jan. 22, 1985, Pat. No. 4,597,795. This application Dec. 16, 1985, Ser. No. 809,171
Claims priority, application Japan, Mar. 5, 1984, 59-40526; Apr. 3, 1984, 59-65097
Int. Cl.[4] B41L 1/20
U.S. Cl. 346—221 11 Claims

1. A heat sensitive recording sheet comprising a substrate sheet and a heat sensitive recording layer formed on the substrate sheet and comprising a color former, a color developing agent and a resinous bonding agent, the color former comprising at least one 6-tetrahydrofurfurylaminofluoran compound of the formula (I):

(I)

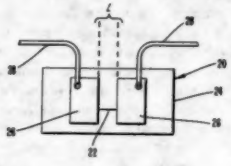


wherein R_1 represents a member selected from the group consisting of a hydrogen atom, alkyl radicals having 1 to 8 carbon atoms, a tetrahydrofurfuryl radical, a phenyl radical, an alkylphenyl radical in which the alkyl group has 1 to 5 carbon atoms, and cyclic alkyl radicals having 3 to 8 carbon atoms; R_2 represents a member selected from the group consisting of a hydrogen atom, chlorine atom, fluorine atom, alkyl radicals having 1 to 5 carbon atoms, alkoxy radicals having 1 to 5 carbon atoms, alkoxyalkyl radicals having 2 to 10 carbon atoms, a phenyl radical, and a benzyl radical; and R_3 represents a hydrogen atom, chlorine atom, fluorine atom, alkyl radicals having 1 to 5 carbon atoms, and acyl radicals having 2 to 7 carbon atoms.

4,642,664
ELECTRICAL DEVICE MADE OF PARTIALLY PRYOLYZED POLYMER

Harris A. Goldberg, Colonia; Ilmar L. Kalnin, Millington; Clyde C. Williams, Roselle, all of N.J., and Ian L. Spain, Fort Collins, Colo., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,401
Int. Cl.[4] H01L 45/00
U.S. Cl. 357—2 16 Claims

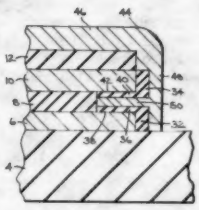


1. An electrical switch comprising:
a filament of partially pyrolyzed polymeric material pyrolyzed at a temperature between 500° C. and 800° C. so that it exhibits negative resistance in a portion of a voltage-current domain; and
means for applying an electric signal to the filament of material to casue the material to exhibit negative resistance.

4,642,665
VERTICALLY LAYERED MOMOM TUNNEL DEVICE

Robert W. Lade, Milwaukee; James A. Benjamin, Waukesha, and Herman P. Schutten, Milwaukee, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 19, 1984, Ser. No. 683,729
Int. Cl.[4] H01L 49/02, 27/14
U.S. Cl. 357—6 9 Claims



1. An MOMOM tunnel device comprising:
an insulating substrate;
a first metal layer on said substrate;
a first insulating layer on said first metal layer;
a second metal layer on said first insulating layer;
a first oxidation layer on said first metal layer;
a second oxidation layer on said second metal layer; and
a third metal layer between said first and second oxidation layers;
wherein said first and second metal layers comprise noncolinearly aligned strips having portions vertically overlapped and separated by said first insulating layer therebetween;
and comprising a second insulating layer on said second metal layer,
and wherein:
said first and second metal layers and said first and second insulating layers extend horizontally and have a generally vertical side exposing the edges thereof;
said first and second oxidation layers are on said exposed edges of respective said first and second metal layers; and
said third metal layer extends horizontally along the top of said second insulating layer and vertically along said side of said layers over and between said first and second oxidation layers.

4,642,666
HIGH POWER MOSFET WITH LOW ON-RESISTANCE AND HIGH BREAKDOWN VOLTAGE

Alexander Lidow, Manhattan, and Thomas Herman, Redondo, both of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.

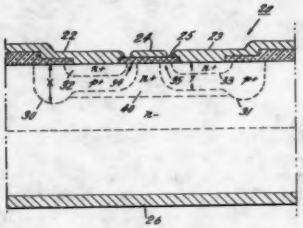
Division of Ser. No. 232,713, Feb. 9, 1981, which is a continuation of Ser. No. 951,310, Oct. 13, 1978, abandoned. This application Mar. 3, 1983, Ser. No. 471,818
Int. Cl.[4] H01L 29/78
U.S. Cl. 357—23.4 10 Claims

1. A three-terminal power metal oxide silicon field effect transistor device comprising:
a wafer of semiconductor material having first and second opposing semiconductor surfaces; said wafer of semiconductor material having a relatively lightly doped major body portion for receiving junctions and being doped with impurities of one conductivity type;
at least first and second spaced base regions of the opposite

conductivity type to said one conductivity type formed in said wafer and extending from said first semiconductor surface to a depth beneath said first semiconductor surface; the space between said at least first and second base regions defining a common conduction region of one conductivity type at a given first semiconductor surface location;

first and second source regions of said one conductivity type formed in each pair of said at least first and second base regions respectively at first and second first surface locations and extending from said first and second first surface locations to a depth less than said depth of said base regions; said first and second source regions being laterally spaced along said first semiconductor surface from the facing respective edges of said common conduction region thereby to define first and second channel regions along said first semiconductor surface between each pair of said first and second source regions, respectively and said common conduction region;

source electrode means connected to said source regions and comprising a first terminal;



gate insulation layer means on said first surface, disposed at least on said first and second channel regions;

gate electrode means on said gate insulation layer means, overlying said first and second channel regions and comprising a second terminal;

a drain conductive region remote from said common region and separated therefrom by said relatively lightly doped major body portion;

a drain electrode coupled to said drain conductive region and comprising a third terminal;

each of said at least first and second spaced base regions of said opposite conductivity type having respective profiles which include relatively shallow depth regions extending from said common region and underlying their said respective first and second source regions, and respective relatively deep, relatively large radius regions extending from said shallow depth regions which are laterally spaced from beneath said respective source regions on the side of said source regions which is away from said common region.

4,642,667

INTEGRATED CIRCUITS

Terence E. Magee, Fulbourn, England, assignor to Standard Telephones & Cables, London, England

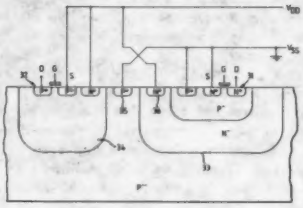
Filed Oct. 17, 1984, Ser. No. 661,819

Claims priority, application United Kingdom, Oct. 18, 1983, 8327868

Int. Cl.⁴ H01L *29/72*

U.S. Cl. 357—35 **1 Claim**

1. An MOS compatible bipolar transistor structure comprising an npn lateral high gain transistor and an npn vertical low gain transistor formed in a lightly doped n^--type well in a major surface of a very lightly doped p^{--}-type substrate, the structure comprising a lightly doped p^--type well found in the n^--type well, a p^+-region and p-type region formed in the p^--type well, a first n^+-type region formed in said p-type region, and a second n^+-type region formed at the surface boundary between the p^--type well and the n^--type well, wherein said first n^+-type region provides a common emitter of both said transistors, wherein said second n^+-type region provides the collector of the lateral transistor and a collector contact of the vertical transistor, wherein said p^+-type region provides a base contact of both said transistors, wherein said p-type region provides the base of the lateral transistor and,



together with the p^--type well, the base of the vertical transistor, and wherein a depletion region is disposed across the boundary between the p^--type and n^--type wells, the boundary being narrow adjacent the lateral transistor base so as to provide a high lateral gain and wide adjacent the vertical transistor base so as to provide a low vertical gain, whereby the structure, in use, acts predominantly in a lateral mode.

4,642,668

SEMICONDUCTOR DEVICE HAVING IMPROVED THERMAL CHARACTERISTICS

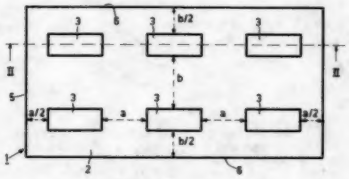
Henricus T. J. Tacken, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 558,228, Dec. 5, 1983, abandoned. This application Dec. 5, 1985, Ser. No. 805,579

Claims priority, application Netherlands, Dec. 17, 1982, 8204878

Int. Cl.⁴ H01L *29/70, 29/72*

U.S. Cl. 357—36 **7 Claims**



1. A semiconductor device comprising a semiconductor body having a major surface, a power transistor in said body and having an emitter of a first conductivity type adjoining said surface, a base of a second, opposite conductivity type, also adjoining said surface, and a collector of the first conductivity type adjoining the base, the emitter zone comprising a row of finger-shaped regions of the first conductivity type which extend in the base substantially parallel to each other in a direction at right angles to the longitudinal direction of the row, said row of finger-shaped regions comprising a plurality of sub-rows, each sub-row having a plurality of finger-shaped regions at substantially equal distances from each other, the distances between two adjacent sub-rows differing from the distance between the finger-shaped regions in a sub-row, said row being located between two parallel edges of the semiconductor body and along a line substantially perpendicular to said edges, and the distance between an edge and an adjacent sub-row being substantially equal to one-half the distance between two sub-rows.

4,642,669
SEMICONDUCTOR DEVICE HAVING A BLOCKING CAPABILITY IN ONLY ONE DIRECTION

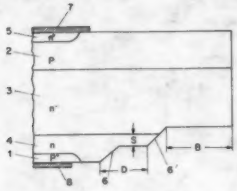
Peter Roggwiller, Riedt-Neerach, and Roland Sittig, Umiken, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Dec. 7, 1984, Ser. No. 679,359

Claims priority, application Switzerland, Dec. 7, 1983, 6544/83

Int. Cl.[4] H01L *29/34*

U.S. Cl. 357—52 **5 Claims**



1. A semiconductor device having a blocking capbility in only one direction, comprisng:

an anode;

a cathode;

a plurality of differently doped layers stacked along a main axis between said anode and said cathode, said doped layers including,

a first highly doped p^+ layer provided aside said anode,

a second highly doped n^+ layer provided aside said cathode,

a third layer with a low-level n^- doping provided between said first and second layers,

a fourth n-doped stopping layer with a doping concentration lying in between the doping concentrations of said second and third layers provided adjoining said third layer on one side,

wherein said stopping layer has a thickness S and a number of donor atoms selected so as to satisfy the equation:

$$\frac{e}{\epsilon} \int_0^S N_D(x)dx = k \cdot E_n$$

with

e=elementary charge

ϵ=dielectric constant of the semiconductor material of said device,

N_D=donor concentration in said stopping layer (in cm^{-3}),

x=path coordinate of an integration path parallel to said main axis of said device (in cm),

k=numerical constant with $0.8 \leqq K \leqq 1.0$,

E_n=electrical field strength at the junction between said third and fourth layers at the breakdown voltage of said device; and

a recess provided at the edge of said stopping layer.

4,642,670
CHIP CARRIER PACKAGE

Kurt M. Striny, Emmaus, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 2, 1983, Ser. No. 557,596

Int. Cl.[4] H01L *23/48, 23/30*

U.S. Cl. 357—68 **6 Claims**

1. An integrated circuit package comprising an integrated circuit chip encapsulated within a unitary plastic body to form a chip carrier integrated circuit unitary package, a plurality of closely spaced leads arranged along at least one side of the chip carrier at least some of which comprise a wire member extending from the side of the chip carrier unitary package, an approximately right angle bend in the wire member thus providing a portion of the wire member extending approximately vertically downward with respect to the side of the chip carrier unitary package and a U-shaped or V-shaped bend in said portion said bend extending toward the chip side of the chip carrier unitary package so as to provide a bearing point at the base of the U-shaped or V-shaped bend to prevent the approximately vertically extending portion from bearing against the chip carrier unitary package and causing permanent deformation if the wire member is deflected during socketing, handling or the like.

4,642,671
SEMI-CONDUCTOR ASSEMBLY

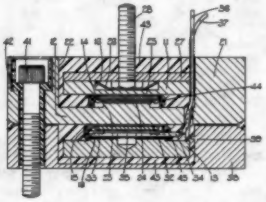
Ivor C. Rohsler, Harborne, and Anthony F. C. Clark, Stratford-upon-Avon, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Jul. 28, 1983, Ser. No. 518,106

Claims priority, application United Kingdom, Jul. 29, 1982, 8221973

Int. Cl.[4] H01L *23/42*

U.S. Cl. 357—79 **6 Claims**



1. A semi-conductor assembly, comprising:

(a) first, second and third electrically conductive members;

(b) a semi-conductor diode positioned between said first and second conductive members,

wherein the anode region of the diode is electrically connected to one of said first and second conductive members and the cathode region is electrically connected to the other of said first and second conductive members;

(c) a semi-conductor thyristor positioned between said second and third conductive members,

wherein one of said semi-conductor thyristor anode and cathode terminal regions is connected to the second conductive member and the other of the anode and cathode terminal regions is connected to the third conductive member, and

wherein said third and first electrically conductive members are electrically interconnected, and the terminal region of the semi-conductor diode which is electrically connected to the second conductive member is of opposite polarity to the thyristor terminal region which is also electrically connected to the second conductive member,

(d) means for making an electrical connection to a gate terminal region of the thyristor; and

(e) heat sink means including said second conductive member for accepting heat from said diode and thyristor,

wherein said heat sink means includes thermally conductive block means having first and second opposed recesses,

wherein said second conductive member forms a boundary wall separating said first and second recesses, said first recess houses said diode, said second recess houses said thyristor, and said first and third conductive members are resiliently biased towards one another so that said diode and said thyristor are loaded against said second conductive member,

wherein said block means is of two part construction and said second conductive member is integral with one of the two parts, and

wherein said first conductive member is housed in said first recess and said third conductive member is housed in said second recess.

4,642,672

SEMICONDUCTOR DEVICE HAVING REGISTRATION MARK FOR ELECTRON BEAM EXPOSURE

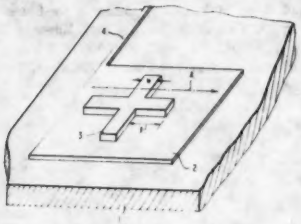
Makoto Kitakata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,569

Claims priority, application Japan, Sep. 14, 1982, 57-160060

Int. Cl.[4] H01L *49/02, 21/66*

U.S. Cl. 357—40 **9 Claims**



1. A semiconductor device comprising a semiconductor substrate having a rectangular shape in the plan view surrounded by four straight edge lines, a device region to form device elements therein positioned at a major space of said semiconductor substrate, a registration mark for electron beam exposure provided on a peripheral portion of said semiconductor substrate other than said device region, and a connecting portion connected electrically to said registration mark, extending on said semiconductor substrate from said registration mark toward a part of one of said straight edge lines without entering into any part of said device region and reaching said part of said one of said straight edge lines, said registration mark and said device region being free from any means for connecting electrically therebetween, and said registration mark including a lower metal film deposited on one major surface of said semiconductor substrate and an upper metal film on said lower metal film having a raised or indented pattern.

4,642,673

FLOATING GATE TYPE EEPROM WITH A SUBSTRATE REGION USED FOR THE CONTROL GATE

Junichi Miyamoto, Yokohama, and Tetsuya Iizuka, Funabashi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,604

Claims priority, application Japan, Feb. 25, 1983, 58-30355

Int. Cl.[4] H01L *29/78, 29/94, 29/46*

U.S. Cl. 357—23.5 **13 Claims**

1. A floating gate transistor comprising:

a semiconductor substrate of a first conductivity type;

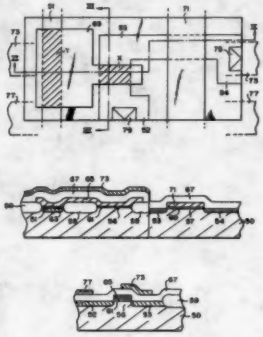
first and second regions of a second conductivity type respectively formed as source and drain regions in the surface area of said substrate;

a third region of the second conductivity type formed as a first control gate electrode in the surface area of said substrate;

a first insulating layer formed on that portion of said substrate which lies between said first and second regions;

a second insulating layer formed on said third region;

a first conductive layer formed as a floating gate electrode on said first and second insulating layers;



a third insulating layer formed on said floating gate electrode; and

a second conductive layer formed as a second control gate electrode on said third insulating layer and electrically connected to said third region.

4,642,674

FIELD EFFECT SEMICONDUCTOR DEVICE HAVING IMPROVED VOLTAGE BREAKDOWN CHARACTERISTICS

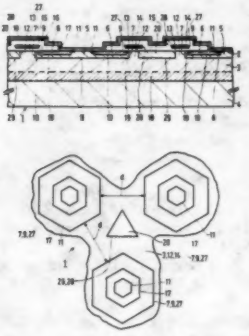
Franciscus A. C. M. Schoofs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 618,632, Jun. 8, 1984. This application Apr. 17, 1986, Ser. No. 854,064

Claims priority, application Netherlands, Jun. 13, 1983, 8302092

Int. Cl.[4] H01L *29/78, 29/90, 27/02, 29/40*

U.S. Cl. 357—23.8 **11 Claims**



1. A semiconductor device comprising a semiconductor body having a major surface, a comparatively weakly-doped semiconductor region of a first conductivity type adjoining said major surface, several first zones of a second conductivity type opposite to the first conductivity type also adjoining said major surface, said first zones being arranged at a regular

distance "d" from each other and extending from the major surface down to a smaller depth in the semiconductor body than the depth of the semiconductor region, a comparatively highly-doped second zone of the first conductivity type inside each first zone which is separated in the semiconductor body by the first zone from the semiconductor region, each first zone having a first outer edge and each second zone having a second outer edge, the second outer edge, viewed on the main surface, being located inside the first outer edge and the first and the second outer edges being substantially equidistant throughout their lengths, each second zone being connected to the adjoining first zone, a substantially symmetrical grid-shaped part of the semiconductor region which separates the first zones from each other at the major surface and surrounds each of the first zones, an insulating layer for covering the grid-shaped part at the major surface, said insulating layer extending beyond the first outer edge and at least as far as the second outer edge, a conductive layer on the insulating layer which serves as a gate electrode and covers at least part of the major surface occupied by the grid-shaped part, said conductive layer having openings whose sizes correspond to the later extent of the first zones located beneath these openings in the semiconductory body, and further surface zones of the second conductivity type provided at the major surface in the grid-shaped part at intermediate spaces thereof bounded by three or more first zones, said further zones being electrically isolated from said gate electrode and filling substantially all of said intermediate spaces which are located at a distance of at least half said regular distance "d" from said first zones, and the conductive layer being provided with further openings above the further surface zones whose sizes correspond to the lateral extent of the further surface zones.

4,642,675

SUPERHETERODYNE RECEIVER

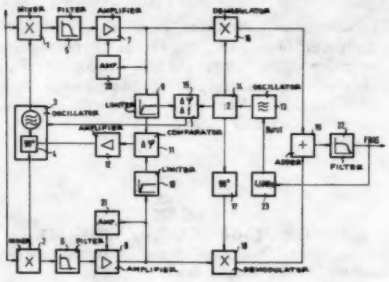
Gerhard G. Gassmann, Esslingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 13, 1984, Ser. No. 599,760

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 3313867

Int. Cl.[4] H04N *9/64*

U.S. Cl. 358—21 R **12 Claims**



1. A superhetrodyne receiver for receiving an amplitude modulated RF (radio frequency) television signal, comprising:

an RF oscillator for producing first and second output signals within the spectrum of said RF signal, said first and second output signals differing in phase by 90 degrees, said RF oscillator being adjustable such that when a vestigial sideband modulated television signal with a picture carrier and a chrominance subcarrier is received the frequency of said first and second output signals is precisely in the middle between the frequency of said picture carrier and said chrominance subcarrier;

a first RF mixer for mixing said RF signal with said first output signal to provide first IF signals;

a second RF mixer for mixing said RF signal with said second output signal to provide second IF signals;

said first and second IF signals each including the picture IF carrier and the chrominance IF subcarrier, said picture IF carrier and said chrominance IF subcarrier coinciding in frequency and having a predetermined fixed phase relationship;

first and second low-pass filters of like design respectively receiving said first and second IF signals and providing first and second IF signal outputs, said first and second low-pass filters each having cut off frequencies located at approximately one half the bandwidth of said RF signal and each having a slope selected to simultaneously serve as Nyquist slopes for said picture IF carrier and said chrominance IF subcarrier, and each having attenuation characters in the cut off regions such that adjacent television signal channels are attenuated in accordance with a predetermined standard;

first and second demodulations for respectively demodulators said first and second IF signal outputs to provide first and second demodulated signals; and

an arithmetic circuit for combining said first and second demodulated signals.

4,642,676

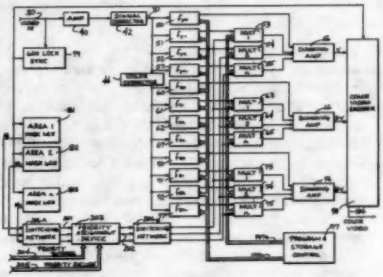
PRIORITY MASKING TECHNIQUES FOR VIDEO SPECIAL EFFECTS

Ralph Weinger, Philadelphia, Pa., assignor to Color Systems Technology, Inc., Marina Del Rey, Calif.

Filed Sep. 10, 1984, Ser. No. 649,276

Int. Cl.[4] H04N *9/74*

U.S. Cl. 358—22 **40 Claims**



1. A method for priority enhancement modifying a specified area of a video picture, comprising the steps of:

generating a first area enhancement conversion signal for enhancing a first segment of said video picture according to said first area enhancement conversion signal;

generating a second area enhancement conversion signal for enhancing a second segment of said video picture according to said second area enhancement conversion signal, said second segment, at least in part, overlapping at least a part of said first segment;

combining said first and second area enhancement conversion signals in a manner to produce a composite enhancement conversion signal in which a selected one of said first and second area enhancement conversion signals has a degree of priority over the other of said area enhancement conversion signals in the area of said video picture in which said segment overlapping occurs; and

enhancement modifying said first and second video picture segments according to said composite enhancement conversion signal, while enhancement modifying said area of said video picture in which said segment overlapping occurs in accordance with said selected enhancement

conversion signal relative to the nonselected enhancement conversion signal in proportion to said degree of priority.

4,642,677

COLOR TV CAMERA WITH PLURAL SOLID STATE IMAGING DEVICES MUTUALLY HORIZONTALLY DISPLACED AND ASSOCIATED FILTERS OF VERTICALLY-ORIENTED COLOR STRIPES

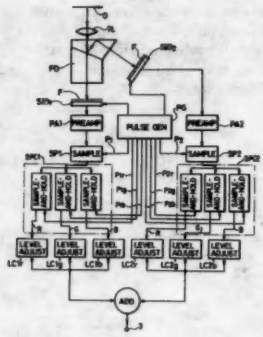
Itsuo Takanashi; Tadayoshi Miyoshi, both of Yokohama; Shintaro Nakagaki, Fujisawa, and Hiroshi Nishiyama, Kanagawa, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Jul. 20, 1984, Ser. No. 632,873

Claims priority, application Japan, Jul. 21, 1983, 58-133397; Jul. 25, 1983, 58-135428

Int. Cl.[4] H04N 9/09, 9/04, 9/097

U.S. Cl. 358—43 15 Claims



1. A color television camera comprising:

(a) an optical system for splitting an incident light ray from an object into N rays wherein N is a positive integer greater than 1, each of said N rays providing an identical image of said object or a mirror image thereof;

(b) N solid-state imaging devices having identical pixel configurations respectively responsive to said N rays from said optical system, each of said imaging devices having pixels arranged in horizontal and vertical directions so that vertically-extending rows of pixels are formed, said rows being disposed at a predetermined horizontal pitch, said imaging devices being disposed such that each succeeding one of said imaging devices is progressively displaced by a distance of 1/N of said horizontal pitch in said horizontal direction relative to an incident identical or mirror image with respect to a preceding one of said imaging devices;

(c) N color separation stripe filters each having an identical predetermined repetitive pattern of color stripes extending vertically or a pattern which is a mirror image of said repetitive pattern, said color stripes having a horizontal width substantially equal to said horizontal pitch, said N color separation stripe filters being respectively disposed in front of said N imaging devices so that said N rays are respectively subjected to filtration by said N color separation stripe filters before projecting into said N imaging devices;

(d) pulse generating means for producing N pulse trains of N phases for respectively driving said N imaging devices so that output signals having a predetermined phase difference therebetween are derived from said N imaging devices;

(e) N sampling circuits for sampling respectively said output signals from said N imaging devices such that each of said output signals from said N imaging devices is sampled at a predetermined interval so that information corresponding to each pixel of said imaging devices is derived, said N sampling circuits being arranged to be successively operated in a predetermined order; and

(f) combining means responsive to output signals from said N sampling circuits for producing a single multil-color video signal.

4,642,678

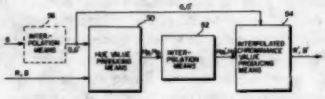
SIGNAL PROCESSING METHOD AND APPARATUS FOR PRODUCING INTERPOLATED CHROMINANCE VALUES IN A SAMPLED COLOR IMAGE SIGNAL

David R. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 648,999, Sep. 10, 1984, abandoned, and a continuation of Ser. No. 676,910, Nov. 30, 1984, abandoned, which is a continuation of Ser. No. 648,998, Sep. 10, 1984, abandoned. This application Feb. 3, 1986, Ser. No. 825,008

Int. Cl.[4] H04N 9/077, 9/07

U.S. Cl. 358—44 7 Claims



1. A method of processing a sampled color image signal having luminance values representing a luminance component of a color image sampled at a high spatial frequency and chrominance values representing a chrominance component of the color image sampled at a relatively lower spatial frequency for producing an interpolated chrominance value representing the chrominance component of the color image at an interpolation location between two neighboring chrominance component sampling locations, comprising the steps of:

(a) producing neighboring hue values representing a hue component of the image at the two neighboring chrominance component sampling locations as a function of a chrominance value and a luminance value at each of the two neighboring chrominance component sampling locations;

(b) producing an interpolated hue value representing the hue component of the color image at the interpolation location by interpolating between the neighboring hue values; and

(c) producing the interpolated chrominance value as a function of the interpolated hue value and a luminance value at the interpolation location.

4,642,679

COLOR IMAGE READING APPARATUS

Fumikazu Nagano, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 13, 1985, Ser. No. 744,474

Claims priority, application Japan, Jun. 15, 1984, 59-124202; Jun. 15, 1984, 59-124203; Aug. 2, 1984, 59-163713; Aug. 22, 1984, 59-175353; Nov. 30, 1984, 59-254580

Int. Cl.[4] H04N 1/46

U.S. Cl. 358—75 13 Claims

1. A color image reading device for reading an original comprising:

first light source for generating a first light with an afterglow characteristics;

second light source for generating a second light with no afterglow characteristics;

third light source for generating a third light with no afterglow characteristics;

a control means for sequentially actuating said first, second and third lights in a predetermined time sequence;

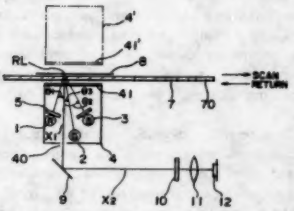


image detecting device for detecting image under said first light during the afterglow, under the second light, and under the third light.

4,642,680

METHOD AND SYSTEM FOR PROCESSING IMAGE DATA STORED IN RGB FORM

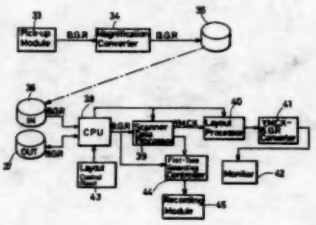
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Sep. 2, 1983, Ser. No. 528,891

Claims priority, application Japan, Dec. 14, 1982, 57-219797

Int. Cl.⁴ H04N *1/46*

U.S. Cl. 358—78 **14 Claims**



1. A method for processing image data in an image reproducing system operable for storing into a primary memory image data obtained by scanning plural original color pictures, performing a layout operation on image data read from the primary memory, storing the data on which the layout operation has been performed into a secondary memory, and recording color separation images Y, M, C and K with a recording scanner by using data read from the secondary memory comprising the steps of:

(a) storing color component data B, G, and R in said memories; and

(b) performing a flat tone generating operation on color separation data obtained by conversion of color component data obtained from at least one of said memories for recording said color separation images.

4,642,681

COLOR IMAGE PROCESSING APPARATUS FOR GENERATING COLOR OUTPUT SIGNALS AND A BLACK OUTPUT SIGNAL IN A MUTUALLY EXCLUSIVE MANNER

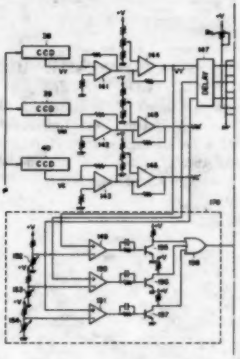
Yoshinori Ikeda, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

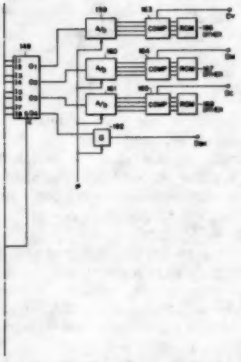
Filed Oct. 4, 1983, Ser. No. 538,916

Claims priority, application Japan, Oct. 8, 1982, 57-178115; Oct. 9, 1982, 57-178075; Mar. 7, 1983, 58-36021

Int. Cl.⁴ G03F *3/08*; H04N *1/46*

U.S. Cl. 358—79 **8 Claims**





1. A color image processing apparatus, comprising:

signal generating means for generating color signals representative of three color components, each having a density level, for one pixel;

detecting means for detecting a specific color having a density level exceeding a predetermined density level by detecting said signals representative of said three color components and for generating a specific signal representative of said specific color;

first processing means, responsive to said color signals, for conducting half-tone reproduction processing of said color signals to output color output signals;

second processing means, responsive to said specific signal, for outputting a signal of a predetermined level; and

prohibiting means for prohibiting the output of said color output signals by said first processing means when said second processing means outputs said signal of the predetermined level.

6. A color image processing apparatus, comprising:

signal generating means for generating color signals representative of first, second, and third color components, each having a density level, for one pixel; and

black signal generating means for generating a black signal upon detection of the condition that the color signal representative of said first color component has a higher density level than a first level, that the color signal representative of said second color component has a higher density level than a second level, and that the color signal representative of the third color component has a higher density level than a third level, said first, second and third levels being different from one another.

4,642,682

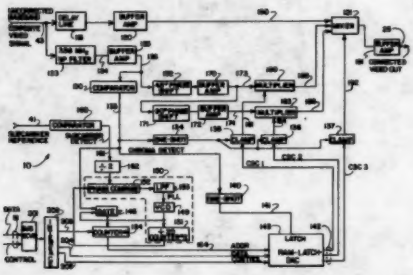
PHASE RESPONSIVE COMPOSITE VIDEO SIGNAL CONTROL SYSTEM

Michael L. Orsburn, Copper City; Robert L. Hemsky, Boca Raton, and James I. Bacon, Fort Lauderdale, all of Fla., assignors to VTA Technologies, Inc., Hollywood, Fla.

Filed Apr. 27, 1984, Ser. No. 604,845

Int. Cl.[4] H04N *9/11*

U.S. Cl. 358—80 **59 Claims**



1. A phase responsive video signal correction system for correcting a video parameter of an image represented by a composite video signal, comprising:

phase detecting means responsive to detect relative phase between a phase encoded component of an uncorrected composite video signal and a reference signal in each one of a plurality of ranges of phases representable by said composite video signal;

correction signal means responsive to said detected relative phase for generating a correction signal related to said detected relative phase; and

means responsive to said correction signal for correcting said uncorrected composite video signal to provide a corrected composite video signal.

8. A phase responsive video parameter control system for controlling a video parameter of a portion of a video image represented by a phase-encoded input video signal, said portion of said video image being at least partially defined by a predetermined hue, comprising:

memory means for storing a plurality of correction signals, each of said correction signals corresponding to a desired value of said video parameter for each one of a plurality of color intervals, each of said color intervals corresponding to one of a plurality of ranges of phase differences between said input video signal and a subcarrier reference signal;

phase detecting means responsive to said phase-encoded video signal for detecting said predetermined hue by detecting relative phase between said phase encoded video signal and said subcarrier reference signal and for providing a correction value selection signal related to the detected instantaneous hue of said video image;

correction value selecting means responsive to said correction value selection signal for selecting and retrieving a particular one of said plurality of correction signals associated with a particular one of said color intervals stored in said memory means and for providing said particular correction signal as an output, said particular correction signal being related to a particular desired value of said video parameter for said detected instantaneous hue; and

means responsive to said particular correction signal for controlling said video parameter to said particular desired value.

27. A hue responsive video signal correction system for correcting a video parameter of an image represented by an uncorrected input color video signal, comprising:

hue detecting means responsive to said input color video signal for detecting hue of said input color video signal in one of a plurality of ranges of hues representable by said input color video signal; and

means responsive to said hue detecting means and comprising a single channel circuit for correcting a parameter of said uncorrected input color video signal to provide a corrected color video output signal.

4,642,683

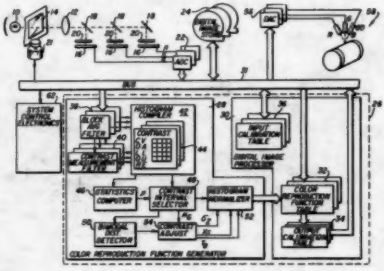
DIGITAL IMAGE PROCESSING METHOD FOR IMAGES WITH BIMODAL TONE VALUE DISTRIBUTION

James S. Alkofer, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1985, Ser. No. 730,624

Int. Cl.[4] G03F *3/08;* H04N *1/46, 1/40;* G03B *27/80*

U.S. Cl. 358—80 **13 Claims**



1. A digital image processing method for processing a digital image having shadow portions and highlight portions, said method employing a tone reproduction function generated by normalizing a sample of tone values from the digital image, said tone reproduction function being applied to tone values of said digital image to produce processed tone values, characterized by the steps of:

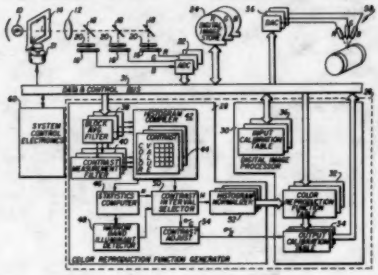
testing said sample of tone values for bimodal distribution; if the sample is bimodal, testing said sample of tone values to determine whether the image contains useful information in the shadow portions, and if useful information is contained in the shadow portions, adjusting the contrast of the image by increasing the contrast of the shadow portions of the image and decreasing the contrast of the highlight portions of the image.

4,642,684

METHOD AND APPARATUS FOR DETECTING AND PRINTING COLOR PHOTOGRAPHIC IMAGES OF SCENES EXPOSED WITH NARROW BAND ILLUMINANT

James S. Alkofer, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1985, Ser. No. 730,626
Int. Cl.[4] G03F 3/08; H04N 1/46; G03B 27/80
U.S. Cl. 358—80 9 Claims



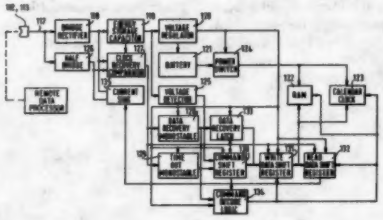
1. A method of printing a color photographic original to produce a color photograph, characterized by the steps of: detecting if the color photographic original was exposed with a narrow-band illuminant, and printing the color photographic original with no color correction if it is detected that said color photographic original was exposed with a narrow-band illuminant.

4,642,685

STORING DATA RELATING TO TELEVISION VIEWING

Lyn M. Roberts; Robert L. Shrier, both of London, and Raymond Laxton, Maidenhead, all of England, assignors to AGB Research, London, England

Filed May 24, 1984, Ser. No. 614,321
Claims priority, application United Kingdom, May 25, 1983, 8314468
Int. Cl.[4] H04N 17/04; H04H 9/00
U.S. Cl. 358—84 9 Claims



3. An apparatus for transferring data obtained from a television viewing monitoring system to a data processor, said apparatus comprising:

a transmitter having means for accepting data relating to the number of people watching a television set and the channel to which the television set is tuned and means for transmitting said data;

a semiconductor storage module for storing said data and comprising an updatable clock, semiconductor storage means and electrical coupling means connected to said clock and storage means for the passage of data between the coupling means and the clock and between the coupling means and the storage means; and

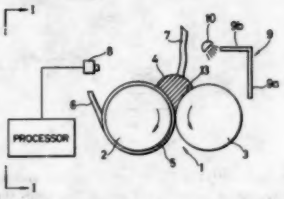
a receiver having means for receiving said data and means for removably electrically coupling said receiving means to said coupling means of said storage module for the transfer of said received data to said storage module, whereby said storage module is able to be removed and its stored data read by and its clock updated by an external data processor, the storage module further comprising means for outputting to the external data processor time information derived from the updatable clock and relating to the time at which said data was received by the receiver.

4,642,686

SYSTEM FOR MEASURING AMOUNT OF RUBBER BANK BETWEEN ROLLS

Jun Nagano, and Shuichi Tanaka, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,740
Claims priority, application Japan, Apr. 13, 1984, 59-74209
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—107 11 Claims



1. A system for measuring the amount of rubber contained between a pair of rolls comprising;

camera means arranged in front of a rubber bank constrained between said pair of rolls for obtaining a silhouette of said banked rubber;

a screen positioned in a straight line connecting said banked rubber and said camera means and located behind said banked rubber;

a light source directing light onto said screen for illuminating said banked rubber by backlighting, a portion of light from said screen not impinging onto said banked rubber but extending directly into said camera means and providing a bright portion and whereas light from said said screen impinging on said rubber provides a dark portion so that said silhouette is detected by said camera means; and

processor means for determining the amount of banked rubber from an image produced by said camera means.

4,642,687

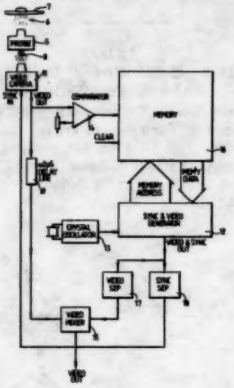
SUPERIMPOSITION OF NON-VISUAL SIGNALS UPON AN IMAGE SIGNAL IN A VIDEO DISPLAY SYSTEM

Francis A. Wedgwood, Nr Wallingford; Peter F. Peck, Wantage, and Michael P. Stevens, Drayton, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 6, 1984, Ser. No. 576,939
Claims priority, application United Kingdom, Feb. 10, 1983, 8303693
Int. Cl.[4] H04N 5/30, 9/04
U.S. Cl. 358—110 5 Claims

1. An apparatus for generating a video display signal capable of driving a suitable imaging system to produce superimposed images from a video camera and one or more detector systems, which apparatus comprises a video camera, one or more detector systems, the one or at least one of the detector systems including a movable probe, a source on the probe, the position of which source is indicative of a position of investigation of the associated detector system, a detection response of the associated detector system energizing the source, which

source when energized produces light, or other radiation to which the camera responds, in excess of a predetermined intensity, the camera producing, when trained upon an area including said position of investigation, a video image signal of the area including said light or other radiation from the source on the probe, a threshold detector for detecting whenever said light or said other radiation received by the camera exceeds said predetermined intensity, a memory system scanned in



synchronism with the video image signal and arranged to store the video image signal at all image positions where said predetermined intensity is exceeded, and means for mixing a video signal produced by scanning said memory system with the video signal from the camera so that the mixed signal when fed to an imaging system is displayed as a visual image of the area upon which the camera is trained with superimposed bright points at said image positions where said predetermined intensity has been exceeded.

4,642,688

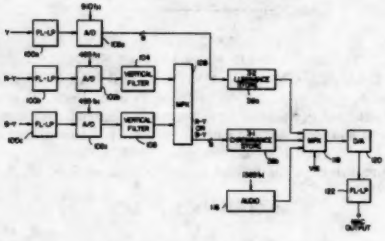
METHOD AND APPARATUS FOR CREATING ENCRYPTED AND DECRYPTED TELEVISION SIGNALS

John D. Lowry, Toronto, and Keith Lucas, Oak Ridges, both of Canada, assignors to Scientific Atlanta, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 507,565, Jun. 24, 1983. This application May 21, 1985, Ser. No. 736,301

Int. Cl.[4] H04N *7/167, 11/06*

U.S. Cl. 380—11 **24 Claims**



19. A method of simultaneously creating a MAC standard television signal by compressing luminance or color difference information and encrypting said MAC standard signal comprising the steps of:

storing a predetermined number of samples of a scan line of luminance information in one line store at a first predetermined sampling frequency; and

commencing reading out said stored scan line of luminance information from said one line store at a second predetermined sampling frequency after a time delay determined by an encryption key.

4,642,689

INCREASING THE RESOLUTION OF A DIGITIZED, TIME-DEPENDENT SIGNAL

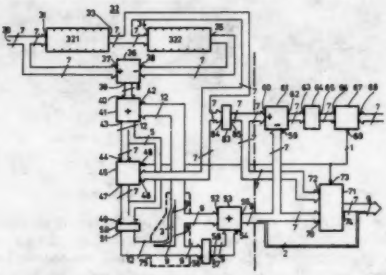
Walter H. Demmer, Hamburg, Fed. Rep. of Germany, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1984, Ser. No. 684,201

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346570

Int. Cl.[4] H04N *5/14*

U.S. Cl. 358—166 **15 Claims**



1. Method of increasing the resolution of a digitized time-dependant video signal, the video signal including a sequence of sampling values, the method comprising the steps of:

obtaining a sampling value;

forming by low-pass filtering an associated mean value with higher resolution from the sampling value and at least one adjacent sampling value; and

replacing the sampling value by the associated mean value only when the sampling value and the associated mean value differ by no more than a predetermined amount.

4,642,690

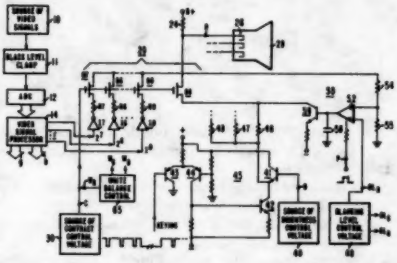
DIGITAL VIDEO SIGNAL PROCESSOR WITH ANALOG LEVEL CONTROL

Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 27, 1984, Ser. No. 644,400

Int. Cl.[4] H04N *5/16, 5/59*

U.S. Cl. 358—169 **9 Claims**



1. A digital video signal processing and display system comprising:

a source of digital video signals comprising plural binary information bits representative of image information to be displayed;

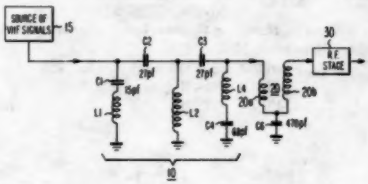
digital signal processor means for digitally processing said video signals;
digital-to-analog signal converter means for providing an output analog signal version of digital output signals from said digital processor;
image display means responsive to video signals applied to an intensity control electrode thereof;
an analog video signal path for coupling said output analog video signals from said converter means to said intensity control electrode of said display means;
means for providing viewer generated analog control signals for controlling the magnitude of said output analog video signals coupled to said display means; and
means for coupling said control signals to said display means in analog form via a signal path exclusive of a signal path including said digital video signal processor; wherein
said digital-to-analog signal converter means corresponds to a video output driver stage for providing to said intensity control electrode of said display means said analog signal version of digital output signals with a magnitude for directly driving said intensity control electrode, said digital-to-analog converter means having a plurality of inputs for receiving respective bits of said digital video signal for combining said bits so as to directly produce at an output said analog signal with a magnitude for directly driving said intensity control electrode; and
said analog control signals are applied to said driver stage for controlling the magnitude of analog video signals coupled to said display means.

4,642,691

TELEVISION SIGNAL INPUT FILTER

Dursun Sakarya, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 28, 1985, Ser. No. 705,494
Int. Cl.[4] H04N *5/21, 5/44*
U.S. Cl. 358—188 **8 Claims**



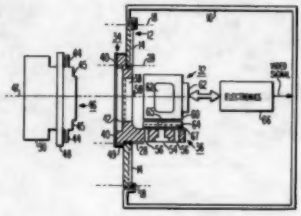
1. In a television signal processing system, apparatus comprising:
a source of television signals;
a radio frequency signal processing stage for processing a band of television signal frequencies to produce intermediate television signal frequencies including video and sound intermediate frequencies; and
a bandpass filter responsive to said television signals for providing filtered television signals to said radio frequency processing stage via a signal path, wherein to prevent locally generated IF signal frequencies and unwanted broadcast signal frequencies outside of said band of television signal frequencies from reaching and interfering with the operation of said radio frequency signal processing stage, said filter comprises
an input filter section comprising a series resonant circuit shunting said signal path;
an output filter section comprising a series resonant circuit shunting said signal path; and
an intermediate filter section with an input terminal for receiving signals from said input section and an output terminal for conveying signals to said output sectiun, said intermediate section including series impedance means between said input and output terminals and exhibiting a given transfer characteristic between said input terminals.

4,642,692

LENS-TO-PRISM MOUNTING STRUCTURE

Zygmunt M. Andrevski, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 1, 1985, Ser. No. 750,153
Int. Cl.[4] H04N *5/30*
U.S. Cl. 358—229 **6 Claims**



1. A television camera comprising:
a lens;
an image pickup arrangement;
a camera enclosure including a front plate portion including an opening dimensioned to pass an image supplied from one end of said lens;
a mounting support of single piece construction having a first portion including an opening therein about the periphery of which is formed means adapted to receive the image supplying end of said lens for precisely positioning the optical axis of said supplied image and a second portion protruding substantially orthogonally from said first portion and including a mounting surface formed on one side thereof to receive said image pickup arrangement for coaxially aligning an input optical axis of said image pickup arrangement with the optical axis of said supplied image; and
means for attaching said support to said camera enclosure front plate such that said openings therein are aligned.

4,642,693

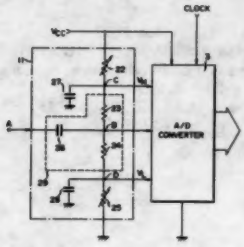
TELEVISION VIDEO SIGNAL A/D CONVERTER APPARATUS

Takahiro Fuse; Masao Kawamura; Koji Yamagishi, all of Tokyo; Kazuyuki Odachi, Tokorozawa; Haruo Ono, and Masaharu Kizaki, both of Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 13, 1985, Ser. No. 733,584
Claims priority, application Japan, May 22, 1984, 59-103035
Int. Cl.[4] H04N *5/74*
U.S. Cl. 358—236 **8 Claims**

1. A television video signal A/D converter apparatus in a liquid crystal television receiver, comprising:
A/D converting means for A/D converting a television video signal;
reference potential generating means connected to said A/D converting means and comprising means for supplying a predetermined upper reference potential (VH) and means for supplying a predetermined lower reference potential (VL); and
high-pass filter means for dividing the upper and lower reference potentials at a given ratio by a resistor so as to supply to said A/D converting means the input television

video signal having a potential level which is fixed at a constant value using the potential at the dividing point of



the upper and lower reference potentials as a bias potential.

4,642,694

TELEVISION VIDEO SIGNAL A/D CONVERTER

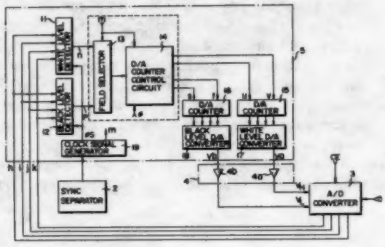
Koji Yamagishi; Takahiro Fuse; Masao Kawamura, and Shinichi Matsui, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 13, 1985, Ser. No. 733,583

Claims priority, application Japan, May 22, 1984, 59-103034; Mar. 8, 1985, 60-46032; Mar. 8, 1985, 60-46033

Int. Cl.[4] H04N *5/74*

U.S. Cl. 358—236 **13 Claims**



1. A television video signal A/D converter comprising:

A/D converting means for sampling a television video signal to A/D convert the signal in accordance with upper and lower reference potentials and for supplying the A/D converted television video signal to a liquid crystal display device;

detecting means, connected to said A/D converting means, for detecting from the A/D converted digital signal, digital values exceeding a predetermined value and below a predetermined value which respectively correspond to the upper and lower reference potentials supplied for A/D conversion;

counting means for respectively counting at least in one field the digital values exceeding the predetermined value and the digital values below the predetermined value which are detected by said detecting means; and

reference potential producing means for determining the upper and lower reference potentials in accordance with counts of said counting means and supplying the upper and lower reference potentials to said A/D converting means.

4,642,695

PROJECTION CATHODE-RAY TUBE HAVING ENHANCED IMAGE BRIGHTNESS

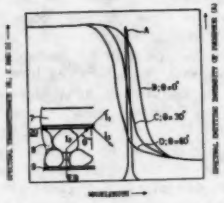
Yasuo Iwasaki, c/o Mitsubishi Denki Kabushiki Kaisha Kyoto Seisakusho, 1 Babazusho, Nagaokakyo-shi, Kyoto-fu, Japan

Filed Oct. 30, 1984, Ser. No. 666,422

Claims priority, application Japan, Nov. 4, 1983, 58-207750

Int. Cl.[4] H04N *5/74, 9/31*

U.S. Cl. 358—237 **3 Claims**



1. A projection cathode-ray tube comprising a vacuum vessel having a face plate, a phosphor layer on an inner surface of said face plate, an interference thin film between the inner surface of said face plate and an outer surface of said phosphor layer, a metal-back film on an inner surface of said phosphor layer and an electron gun within said vessel, wherein an image on said phosphor layer is enlarged and projected on a screen located at a given distance ahead through a projection lens in front of said face plate, such that more than 30% of all luminous flux emitted from an emission point in said phosphor layer is concentrated within a divergent angle of $\pm 30°$ in a direction normal to said face plate.

4,642,696

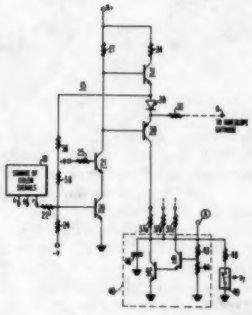
KINESCOPE DRIVER WITH KINESCOPE CURRENT SENSING CIRCUIT

John B. George, Hamilton County, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 25, 1985, Ser. No. 758,755

Int. Cl.[4] H04N *5/53, 5/68, 9/16*

U.S. Cl. 358—243 **10 Claims**



1. In a video signal processing system including an image reproducing device for displaying video information in response to a video signal applied thereto, apparatus comprising:

a video output driver stage with a video signal input and a video signal output for providing an amplified video signal;

means for conveying said amplified video signal to said image reproducing display device, said conveying means having a sensing output for providing thereat a sensed

signal representative of the current conducted by said image reproducing display device;

utilization means responsive to said sensed signal; and

clamping means for selectively clamping said sensing output during normal image intervals, and for unclamping said sensing output during intervals when said sensed signal representative of current conducted by said image reproducing display device is subject to processing by said utilization means; wherein

said clamping means comprises clamping transistor means with an output first electrode coupled to said sensing output, a second electrode coupled to an operating potential, and an input third electrode coupled to said sensing output, the conduction of said clamping transistor means being controlled in accordance with the magnitude of said sensed signal as received by said third electrode; and

said clamping transistor means is self-keyed to exhibit clamping and non-clamping states in response to said sensed representative signal.

4,642,697

FACSIMILE RELAY DEVICE

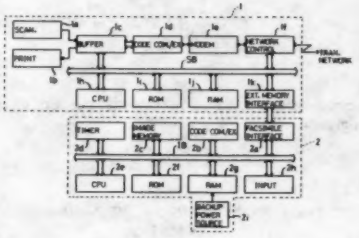
Yoshinori Wada, Miura, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 14, 1984, Ser. No. 681,508

Claims priority, application Japan, Dec. 14, 1983, 58-234297

Int. Cl.[4] H06N *1/32*

U.S. Cl. 358—257 **4 Claims**



1. In a facsimile relay device having a printer, an external interface, means for temporarily storing image information provided from a sending station, and means for relaying stored image information to a destination station appointed by a sending station, the improvement comprising:

an auxiliary memory device operatively connected to said external interface of said facsimile relay device, means for determining when a relay operation from a sending station has been completed, means for sending a relay certificate from a destination station to a sending station indicative of completion of a relay operation to the destination station, means cooperating with said relay certificate sending means for repeating the relay certificate sending operation a predetermined number of times if the relay certificate sending operation is unsuccessful, and control means for actuating said printer to print out a relay certificate at the destination station if said relay certificate sending operation is not successful after said predetermined number of times,

whereby a printed relay certificate record is provided at the destination station if the relay certificate sending operation to the sending station is unsuccesful, such that said record can be manually sent at a later time to the sending station.

4,642,698

METHOD AND SYSTEM FOR CONDENSING BINARY IMAGE DATA

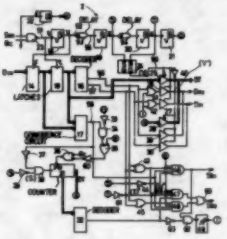
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co. Ltd., Kyoto, Japan

Filed Jan. 12, 1984, Ser. No. 570,261

Claims priority, application Japan, Mar. 28, 1983, 58-53401

Int. Cl.[4] H04N *1/40, 1/417, 1/419*

U.S. Cl. 358—260 **16 Claims**



1. A method for condensing binary image data and reproducing images comprising the steps of:

(a) obtaining data of a line-drawing pixel block composed of m×n pixels by an input scanning means or by a computation means,

(b) identifying a status of the data as:

(i) vacant;

(ii) solid; or

(iii) hybrid;

(c) providing status data differentiating between pixel blocks which are vacant or solid and between blocks which are of a hybrid type,

(d) providing run-length data identifying a number of vacant or solid line-drawing pixel blocks which are in a sequence;

(e) providing m×n bit pattern data describing a line-drawing hybrid pixel block,

(f) generating a word including said status data and said run-length data for vacant or solid pixel blocks and including said status data and said bit pattern data for hybrid pixel blocks,

when said line-drawing pixel blocks are "hybrid" and in a sequence, using the generated word for expressing the status data and the m×n bit pattern data and using a next word for expressing the run-length data corresponding to the sequence number of the hybrid line-drawing pixel blocks.

4,642,699

METHOD OF SCANNING AND RECORDING IMAGES

Michio Ohi, Kusatsu, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 7, 1985, Ser. No. 742,543

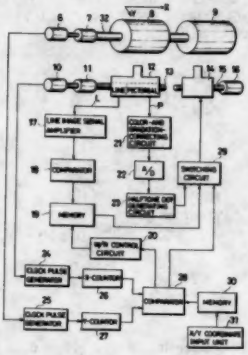
Claims priority, application Japan, Jun. 20, 1984, 59-126910

Int. Cl.[4] H04N *1/40*

U.S. Cl. 358—280 **3 Claims**

1. The method of reproducing a combined image scene which includes both line image and pictorial image portions which comprises forming a first image scene in which the line image portion to be combined is separate from the pictorial image portion with which it is to be combined in the combined image scene, deriving the coordinates of the pixels forming the boundaries of the line image portion and of the pictorial image portion in the combined image scene and storing said coordinates in a first memory, scanning the first image scene pixel by pixel for deriving a signal which is a measure of the intensity level of each pixel and comparing the coordinates of each pixel scanned with the coordinates stored in the first memory, supplying reproducing means with input signals for reproducing the combined image scene in synchronism with the scanning of

the first image scene, storing in a second memory the derived signal of each pixel included within the boundaries of the line image portion whose coordinates are stored in the first memory, while transmitting to the reproducing means the signals of each pixel whose coordinates are outside the boundaries of the



line image portion whose coordinates are stored in the first memory, and transmitting to the reproducing means the corresponding signal stored in the second memory when the pixel scanned in the first image scene corresponds to a pixel included within the boundaries of the line image whose coordinates are stored in the first memory means.

4,642,700

METHOD OF AND APPARATUS FOR PRODUCING VIDEO SIGNAL ASSOCIATED WITH PHOTOGRAPHIC IMAGE

Takahiro Ohta; Masafumi Inuiya, both of Kaisei; Kazuyoshi Kobayashi, Chofu, and Takashi Murakami, Omiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

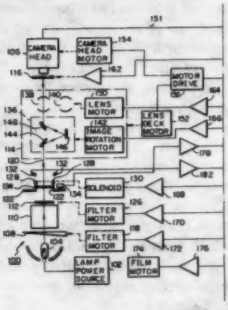
Filed Dec. 27, 1984, Ser. No. 686,906
Claims priority, application Japan, Dec. 30, 1983, 58-248081
Int. Cl.[4] H04N *1/04*
U.S. Cl. 358—285 **26 Claims**

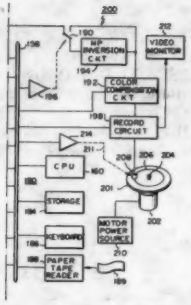
1. A method of producing video signals representative of photographic images which are stored in a plurality of substantially equally dimensioned frames in horizontal and vertical positions by picking up the photographic images, comprising the steps of:

providing a first signal indicative of the horizontal and vertical positions, and a top-bottom orientation of the photographic images stored in the frames;

rotating the photographic images relatively in response to the first signal; and

producing, for a vertically positioned image, a video signal representative of the photographic image with a magnification which is smaller than that of a horizontally positioned image, whereby a video signal is provided which represents a photographic image of a non-inverted top-





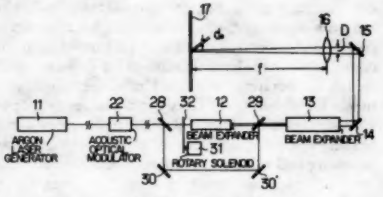
bottom orientation without essential portions of the photographic image being omitted.

4,642,701

DEVICE OF SWITCHING A SCANNING BEAM DIAMETER

Kiyoshi Maeda, Takatsuki, and Tsutomu Ueyama, Shijonawate, both of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Nov. 28, 1984, Ser. No. 675,706
Claims priority, application Japan, Dec. 6, 1983, 58-231109
Int. Cl.[4] H04N *1/21*; G01D *9/42*
U.S. Cl. 358—296 **8 Claims**



1. An apparatus for recording an image on a photosensitive material, comprising:

a light source which emits a beam for sensitizing the photosensitive material;

means for modulating the beam emitted from said light source;

means for branching said beam into at least two branched beams along two optical paths;

means for expanding the beam diameter of said branch beams so that said beam diameter corresponds to scanning lines on the photosensitive material;

means for rejoining said branched beams;

a lens system for converging said beams onto the photosensitive material; and

means, separated from the means for modulating, for alternatively passing a desired beam which is adapted for a desired scanning line to be recorded, said passing means being provided at said branched optical paths.

4,642,702

APPARATUS FOR TIME BASE CORRECTION

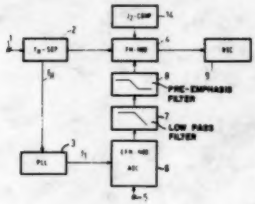
Josephus A. H. M. Kahlman, and Adrianus H. Hoogendijk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 13, 1984, Ser. No. 630,493

Claims priority, application Netherlands, Jul. 15, 1983, 8302542

Int. Cl.⁴ H04N *5/95, 5/781*

U.S. Cl. 358—322 **1 Claim**



1. An apparatus for reproducing a recording signal from a record carrier, in particular an optically readable disc-shaped record carrier, which recording signal comprises a composite colour video signal and a further signal formed by a digital signal comprising a bit stream of data bits which each can assume a limited number of discrete values, said recording signal being recorded on the record carrier in the form of a carrier wave having a frequency in the range of 6.5–9.3 MHz, which carrier is frequency-modulated by the composite colour video signal, which frequency-modulated signal is pulse width modulated by the digital signal, said digital signal occupying a frequency band below the first-order sideband of the frequency-modulated carrier signal, which apparatus comprises an FM-demodulator for recovering the composite colour video signal, a pulse-width demodulator for recovering the digital signal, a video-time-base reference-signal generator, a video-time-base signal separating circuit for extracting a video-time-base signal from the demodulated colour video signal, a phase-comparator circuit for comparing the video-time-base signal with a video-time-base-reference signal and producing a control signal as a function of the phase difference, a speed-control circuit for controlling the speed of transport of the record carrier as a function of said control signal in order to eliminate possible video-time-base errors, a controllable oscillator circuit for supplying a signal which is related to the bit frequency of the digital signal and a control loop for locking the oscillator circuit to a data time-base signal which is derivable from the digital signal.

4,642,703

INFORMATION RECORDING-REPRODUCING METHOD AND APPARATUS

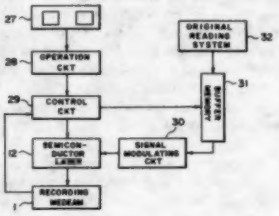
Kiyonobu Endo, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 565,366

Claims priority, application Japan, Dec. 28, 1982, 57-230778

Int. Cl.⁴ G11B *7/00, 11/00*

U.S. Cl. 358—342 **5 Claims**



1. An information recording-reproducing method comprising the steps of:

dividing each of a plurality of document picture signals, which are sequentially input, into a plurality of portions;

writing said signal portions on a recording medium according to a predetermined format, different from the input sequence, to constitute a signal portion sequence corresponding to a retrieval document picture signal including at least one signal portion of each of said plurality of document picture signals; and

reading out said retrieval document picture signal recorded on said recording medium to at least one of display and print out a retrieval document picture corresponding to said retrieval document picture signal.

4,642,704

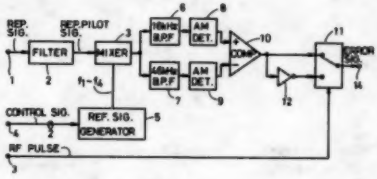
VIDEO SIGNAL REPRODUCING APPARATUS USING PILOT SIGNAL SYSTEM

Nobuhide Doutsubo, Daito, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 1, 1985, Ser. No. 707,344

Int. Cl.⁴ G11B *21/10, 5/45*

U.S. Cl. 360—10.2 **9 Claims**



1. A video signal reproducing apparatus for reproducing by a helical scanning system, a video signal from a magnetic recording medium where said video signal and at least four kinds of pilot signals selected for each field for tracking control are recorded in an overlapping manner, comprising:

at least two reproducing heads mounted on a rotating member, said reproducing heads being enabled alternately by a head selection signal provided in response to the rotation of said rotating member;

head displacing means coupled to said reproducing heads for displacing the positions of said reproducing heads on the surface of said rotating member in the direction of the rotating axis of said rotating member;

reproduced pilot signal providing means coupled to said reproducing heads for extracting pilot signals from the signals reproduced by said reproducing heads;

reference signal providing means capable of providing successively at least four kinds of reference signals having different frequencies in response to said head selection signal, the frequencies of said four kinds of reference signals being selected to be equal to the frequencies of said four kinds of pilot signals, respectively;

error signal providing means coupled to said reproduced pilot signal providing means and said reference signal providing means for providing an error signal for controlling the tracing positions of said reproducing heads with respect to said recording medium based on the outputs of said reproduced pilot signal providing means and said reference signal providing means;

detection period signal providing means for providing a detection period signal at the time of starting still reproduction;

head position control forbidding means coupled to said head displacing means and said detection period signal providing means for forbidding the control of said head displacing means in response to said detection period signal;

level detection signal providing means coupled to said error signal providing means and said detection period signal providing means for observing said error signal changing during the application of said detection period signal and for providing a level detection signal when said error signal attains the optimum prescribed level for tracing control; and

reference signal control means coupled to said level detection signal providing means and said reference signal providing means for controlling said reference signal providing means in response to said level detection signal so as to provide references signals suited for the scanned tracks at the time of still reproduction.

4,642,705

MAGNETIC RECORDING AND REPRODUCTION APPARATUS, SYSTEM AND METHOD

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 405,996, Aug. 6, 1982, Pat. No. 4,578,717. This application Jan. 3, 1986, Ser. No. 815,933

Int. Cl.[4] G11B *5/00*

U.S. Cl. 360—18 **20 Claims**

1. Magnetic recording apparatus comprising:

(a) a first support,

(b) first means supported by said first support for supporting a magnetic record member,

(c) second means supported by said first support including a recording magnetic transducer having aligned pole pieces and operable to magnetically transduce data with respect to said magnetic record member supported by said first support,

(d) means for effecting relative scanning movement between said first and second means to permit said transducer to transduce information with respect to a select record track of said magnetic record member, the improvement comprising:

(e) means for controllably moving said transducer in a manner to selectively change the attitude of its pole pieces to permit it to record data defining at least two discrete magnetic recordings along the same length of the same record track of said magnetic record member, wherein a first of said magnetic recordings is defined by magnetic domains which extend in a first direction in the recording material of a select record track of said magnetic record member and another of said magnetic recordings is defined by magnetic domains which extend in a second direction in the magnetic recording material of the same record track of said record member but at an angle to the longitudinal axis of said track which is different from the angle defined by the first direction in which said domains of said first and said magnetic recordings extend.

4,642,706

VIDEO CASSETTE RECORDER WITH IMPROVED TAPE GUIDING AND TENSIONING

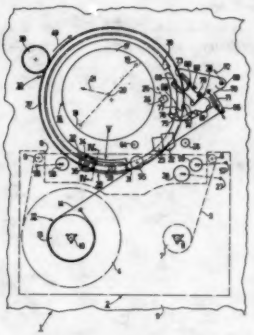
Norbert Vollmann, and Leopold Mader, both of Wiener Neudorf, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1985, Ser. No. 706,209

Claims priority, application Austria, Apr. 25, 1984, 1372/84

Int. Cl.[4] G11B *15/48*

U.S. Cl. 360—74.3 **7 Claims**



1. A helical scan cassette recorder, for use with a cassette accommodating a magnetic tape and having an opening from which tape can be drawn for scanning by the recorder, comprising a panel,

a drum-shaped scanning device for the magnetic tape, mounted to said panel, and having an outer surface around which, during operation, magnetic tape drawn out of the cassette is wrapped over a given angular range,

means, comprising a tape guide device, for drawing the magnetic tape out of a cassette and wrapping the tape around the scanning device; said means comprising at least one tape guide, a displacement device for displacing said at least one tape guide between a rest position and an operating position, and a holder to which the tape guide is secured, arranged such that in the rest position the tape guide engages behind the magnetic tape accommodated in the cassette adjacent to the cassette opening, and in the operating position the magnetic tape which was carried along by the tape guide during displacement, is kept wrapped around the scanning device,

a positioning device for positioning the tape guide in its operating position, and a displaceable support on which the positioning device is arranged, and

a tape tension adjustment device for adjusting tape tension when the magnetic tape wrapped around the scanning device is driven, comprising a tape tension indicator,

characterized in that the displacement device for the tape guide includes a ring for displacing said holder, mounted for pivotal rotation about said scanning device; a guide coaxial to said ring for guiding the holder during its dis-

placement; means for driving said ring pivotally about said scanning device; and a sliding rod pivotally connected to said holder and having a bent free end; and

the displacement device is arranged such that, when the tape guide is in the operating position, the displacement device is disengaged from the tape guide,

the recorder comprises a spring for biasing said displaceable support, and an urging device for urging the tape guide, when in the operating position, against the positioning device against the force of said spring; said urging device being provided on the support so as to be displaceable with respect to the support between a disengaged position and an urged position,

said ring has a slot communicating with said panel, said angular free end engaging said slot during rotation of the ring so as to displace the tape guide towards its operating position,

said panel has a slot aligned with said ring slot when the ring is in the operating position, such that said rod free end is slidably supported by the panel during rotation of the ring from the rest position, while when the ring is in the operating position said bent end is disengaged from the ring and enters the slot in the panel so as to be freely moveable within said slots; and upon rotation of the ring for displacing the tape guide from its operating position toward the rest position, said bent end is moved out of the slot of the panel, and engages an abutment on the ring for moving said holder away from said support, and

the support constitutes the tape tension indicator, and is arranged so as to be displaceable substantially parallel to a longitudinal plane of symmetry of a freely extending magnetic tape section immediately adjacent to the scanning device under the tension exerted by the magnetic tape on the tape guide while situated in its operating position and urged against the positioning device on the support.

4,642,707

MAGNETIC TAPE VIDEO RECORDER WITH A ONE HEAD DRUM

Erich Geiger, Unterkirnach, and Jürgen Kaaden, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 582,075

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305618

Int. Cl.[4] G11B *5/52, 5/56*

U.S. Cl. 360—76 **20 Claims**

1. A magnetic tape recorder for video recording and playback comprising

a rotary single head drum to be wrapped by the recording tape;

a base plate;

a head support pivoted around two mutually vertical axes relative to the base plate;

a dynamic track follow control circuit for correcting the level position of the magnetic tape head;

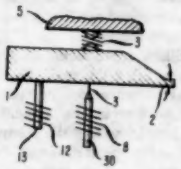
a first drive means actuating the head support for effecting a level correction vertical to the direction of the recording track and connected to the level control circuit;

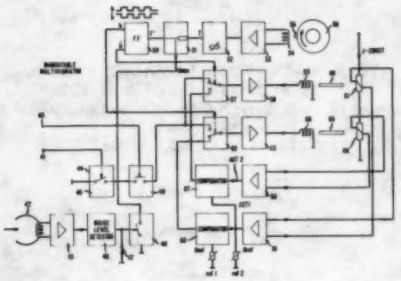
a drive motor for the head support plate;

a rotary pulse generator disposed at the drive motor;

switching means for shaping pulses generated by the rotary pulse generator;

a second driving means for pivoting the head support plate around said second axis and for effecting an azimuth offset for neighboring recording tracks and controlled by the switching means continuously for recording and depending on the sensed signal level for playback and depending on signal changes resulting from switching pulses.





4,642,708

MAGNETIC RECORDING AND REPRODUCING APPARATUS

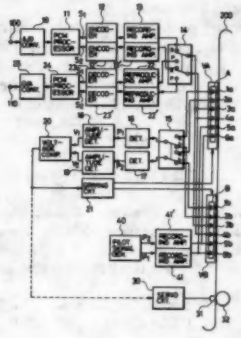
Takashi Furuhata, Yokohama; Katsuo Mohri, Yokosuka, and Katsuo Konishi, Yokohamashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1985, Ser. No. 759,963

Claims priority, application Japan, Jul. 27, 1984, 59-155298

Int. Cl.[4] G11B *5/56*

U.S. Cl. 360—77 **8 Claims**



1. A magnetic recording and reproducing apparatus provided with a disc rotatable at a predetermined speed and a magnetic head mounted on the disc, for recording a signal on a magnetic tape, and the signal being recorded on the magnetic tape so as to form a plurality of recording tracks inclined at a predetermined angle to a traveling direction of the magnetic tape and parallel with each other, which comprises:

a main head mounted on said disc, for recording a signal to be recorded on the magnetic tape;

an auxiliary recording head mounted on said disc at a position near the main head, for recording a pilot signal on the magnetic tape so as to form a recording track having a predetermined relative position with a recording track of the main head;

an auxiliary reproducing head mounted on said disc at a position near the main head, for reproducing the pilot signal recorded in a preceding track, at the time of the main head recording a signal in the next track; and

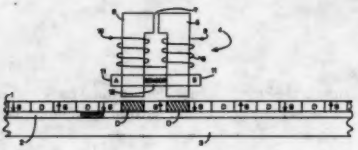
means for controlling the relative position of the main head with the magnetic tape at the time of recording in said next track in response to the pilot signal reproduced by the auxiliary reproducing head.

4,642,709

TWIN TRACK VERTICAL MAGNETIC RECORDING SERVO CONTROL METHOD

Albert W. Vinal, Cary, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1985, Ser. No. 787,876
Int. Cl.[4] G11B *5/56, 23/36*
U.S. Cl. 360—77 **9 Claims**



2. A vertical magnetic servo track recording method comprising a step of:

writing two oppositely magnetically polarized servo tracks parallel to each data track on a vertically polarizable magnetic medium.

5. Vertically polarizable magnetic medium recording head position servo control apparatus, comprising:

a plurality of parallel, vertically polarized recorded servo tracks in said magnetic medium, the vertical magnetic polarity of which tracks alternates from track to track.

4,642,710

ANIMATED DISPLAY CONTROLLED BY AN AUDIO DEVICE

Eugene A. Murtha, Simsbury, Conn.; Mark B. Johnson-Williams, East Longmeadow, Mass.; Theodore N. Madison, Windsor, Conn., and Michael C. Cartabiano, Agawam, Mass., assignors to Milton Bradley International, Inc., Springfield, Mass.

Filed Mar. 15, 1985, Ser. No. 712,382
Int. Cl.[4] G11B *31/00*; G09F *27/00*
U.S. Cl. 360—79 **1 Claim**

1. An animated display device comprising:

an audio tape player of cassette type having a recorded audio signal track,

an animated liquid crystal display and addressing circuitry including a plurality of electrically-conductive matrices arranged in the form of segments representing portions of the eyes and eyebrows and mouth of a human face in different positions suggesting different facial expressions and a driver and driving circuitry having terminals electrically connected to the matrices,

an amplitude detector for outputting signals according to the reading of the audio signals of the tape,

an analog comparator connected to the amplitude detector for outputting digital signals according to the amplitude of the audio signals,

a microprocessor having programmed means for reading the output of the analog comparator and delivering electronic signals to the driver,

a power source for powering the tape player and microprocessor and amplitude detector,

a selector button shiftable between a ready operating mode and a fast forward non-playing mode and a stop mode and an eject mode,

and a housing for accommodating the tape player and liquid crystal display and microprocessor and amplitude detector and power source and selector button,

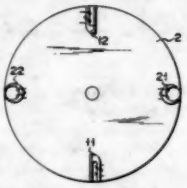
all adapted and arranged for the driving of the liquid crystal display by the driver in animating the facial expressions in seeming synchronization with the tape recorded audio on the cassette tape as transcribed by the player with the facial expressions being changeable responsively to the voltage selectively applied at portions of the liquid crystal composition where the eyes and eyebrows and mouth are represented.

4,642,711

VIDEO TAPE RECORDER INCLUDING VERTICAL RECORDING HEADS

Yutaka Yunoki; Kenji Kimura; Akira Kato, and Tatsuo Imamura, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,323
Claims priority, application Japan, Nov. 29, 1982, 57-209074
Int. Cl.[4] G11B *5/027, 5/127, 5/52, 21/04*
U.S. Cl. 360—84 **16 Claims**



1. A rotary head type video tape recorder, which comprises:

a rotary cylinder arranged for slidable contact, at a portion of the peripheral wall of said cylinder, with a video tape having a recording magnetic layer defining a magnetic plane; and

at least one vertical magnetization recording head mounted

on said rotary cylinder in the vicinity of said peripheral wall;

wherein said vertical magnetization recording head includes a portion which comprises a main magnetic pole and an auxiliary magnetic pole each disposed to face the magnetic plane of said video tape, so that at least part of the recording magnetic flux passing between said main magnetic pole and said auxiliary magnetic pole passes through the recording magnetic layer of the video tape substantially perpendicularly;

wherein the peripheral wall of the rotary cylinder is provided with at least one playback head the location of which is displaced a given angle from the location of said vertical magnetization recording head with respect to the rotational center of said rotary cylinder; and

wherein the playback head includes a first magnetic circuit member having a first vertical end surface and a second magnetic circuit member a part of which is superposed on a part of said first magnetic circuit member and having a second vertical end surface parallel to and facing in the direction of said first end surface, wherein said end surfaces are offset from one another and the distance between the planes of said end surfaces defines a transducing gap at a position facing the magnetic plane of the video tape so that magnetic flux released from said tape is absorbed by one of said end surfaces to be conducted by both said magnetic circuit members and returned to the tape from the other one of said end surfaces, and a ring-shaped magnetic circuit formed in part by said first and said second magnetic circuit members;

means to convert between magnetism and electricity in winding coupling relation with said ring-shaped magnetic circuit; and

control means for activating said vertical magnetization head to record on said video tape the shorter wavelength component of a signal to be recorded, for activating said playback head to record on said video tape the longer wavelength component of said signal to be recorded, and for activating said playback head to play back from said video tape both said shorter and longer wavelength components of said signal.

11. A rotary head type video tape recorder, which comprises:

a rotary cylinder arranged for slidable contact, at a portion of the peripheral wall of said cylinder, with a video tape having a recording magnetic layer defining a magnetic plane; and

at least one vertical magnetization recording head mounted on said rotary cylinder in the vicinity of said peripheral wall;

wherein said vertical magnetization recording head includes a portion which comprises a main magnetic pole and an auxiliary magnetic pole each disposed to face the magnetic plane of said video tape, so that at least part of the recording magnetic flux passing between said main magnetic pole and said auxiliary magnetic pole passes through the recording magnetic layer of the video tape substantially perpendicularly;

wherein the peripheral wall of the rotary cylinder is provided with at least one playback head the location of which is displaced a given angle from the location of said vertical magnetization recording head with respect to the rotational center of said rotary cylinder; and

wherein the vertical magnetization recording head helically scans the magnetic plane of the video tape wound around the rotary cylinder; and the rotational locus of the vertical magnetization recording head is displaced from the rotational locus of the playback head at a distance corresponding to the distance between adjacent recording tracks formed on the video tape by a helical scanning operation, so that immediate post-monitoring of recorded data can be obtained via the playback head; and

control means for activating said vertical magnetization head to record on said video tape the shorter wavelength component of a signal to be recorded, for activating said playback head to record on said video tape the longer wavelength component of said signal to be recorded, and for activating said playback head to play back from said video tape both said shorter and longer wavelength components of said signal.

4,642,712

AUTOMATIC TAPE LOADING TYPE RECORDING AND/OR REPRODUCING APPARATUS HAVING A PLURALITY OF MODES

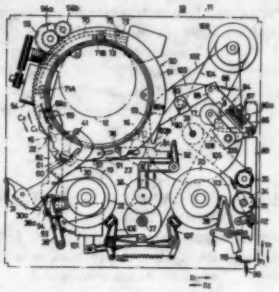
Kazuo Kohda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 16, 1984, Ser. No. 580,897

Claims priority, application Japan, Feb. 28, 1983, 58-33475; Mar. 7, 1983, 58-32569[U]; Mar. 7, 1983, 58-32570[U]

Int. Cl.[4] G11B *5/027, 5/008, 15/00, 17/00*

U.S. Cl. 360—85 **8 Claims**



1. An automatic tape loading type recording and/or reproducing apparatus having a plurality of modes and being set to one of the modes at one time, said recording and/or reproducing apparatus comprising:

a guide-drum having at least a pair of heads for recording and/or reproducing an information signal onto and/or from a tape;

tape guide means for drawing the tape out of a tape cassette which is loaded within the apparatus while said guide means moves to a predetermined position, and for guiding the tape in a predetermined tape path so that the tape is wrapped around a peripheral surface of said guide drum when said guide means is in said predetermined position;

a supply reel disc and a take-up reel disc for rotating reels of said tape cassette, said reels being respectively fitted over said supply and take-up reel discs when said tape cassette is loaded into the apparatus;

a pair of ring-shaped bodies being disposed so as to generally encompass said guide drum in a plan view and rotating to move said tape guide means, each of said pair of ring-shaped bodies assuming a rotational position depending on a set mode of the apparatus so that said pair of ring-shaped bodies move said tape guide means in one direction from an original position up to the predetermined position when each of said pair of ring-shaped bodies rotates from a first rotational position to a second rotational position and moving said tape guide means in a direction opposite to said one direction and back from the predetermined position to the original position when each of said pair of ring-shaped bodies rotates from the second rotational position to the first rotational position;

tape driving means for driving the tape in said predetermined tape path, said tape driving means being displaced to one of a plurality of predetermined positions so that said tape driving means drives the tape at a tape traveling speed and in a tape traveling direction depending on the set mode of the apparatus;

braking means for braking said supply reel disc and said tape-up reel disc, said braking means being displaced to assume one of operating and nonoperating positions depending on the set mode of the apparatus;

first control means responsive to the rotational position of said pair of ring-shaped bodies for displacing said tape driving means to one of said plurality of predetermined positions in correspondence with the set mode of the apparatus; and

second control means responsive to the rotational position of said pair of ring-shaped bodies for displacing said braking means to one of the operating and nonoperating positions in correspondence with the set mode of the apparatus and further said tape driving means comprises a pinch roller which presses against a capstan with the tape pinched between the pinch roller and the capstan, and rotary bodies for making contact with said reel discs and for rotating said reel discs in a tape take-up direction, and said first control means comprises first cam means and second cam means, said first cam means being displaced due to a rotation of said pair of ring-shaped bodies and moving said pinch roller so that said pinch roller presses against said capstan, said second cam means being displaced by a displacement of said first cam means and moving said rotary bodies so that said rotary bodies make contact with said reel discs.

4,642,713

HELICAL SCAN TYPE RECORDING AND/OR REPRODUCING APPARATUS

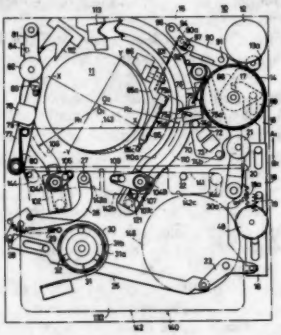
Tsunehisa Ohira, Sagamihara; Shinji Hirano, Tokyo, and Koji Sadakane, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 25, 1984, Ser. No. 623,984

Claims priority, application Japan, Jul. 11, 1983, 58-125866

Int. Cl.[4] G11B *15/66*

U.S. Cl. 360—85 **10 Claims**



1. A helical scan type recording and/or reproducing apparatus comprising:

a cassette loading part into which a tape cassette accommodating therein a tape is loaded;

a guide drum having recording and/or reproducing heads for recording and/or reproducing signals on and/or from the tape which is drawn out of said tape cassette loaded in said cassette loading part, the drawn tape being spirally wrapped around said tape guide drum and traveling along a tape traveling path which comprises an upstream tape path part extending from said tape cassette to a first point where said tape begins to make contact with a peripheral surface of said tape guiding drum, a spiral tape path part extending from said first point to a second point where said tape terminates a contact with the peripheral surface of said tape guide drum, and a downstream tape path part extending from said second point to sait tape cassette;

first loading means for drawing the tape out of said tape cassette loaded in said cassette loading part during a tape loading operation by moving from an unloading position to a loading completion position which is located on said upstream tape path part, without changing a height position thereof which corresponds to a height position of a reference plane which is determined by a center line of the tape within said tape cassette;

second loading means for drawing the tape out of said tape cassette loaded in said cassette loading part during the tape loading operation by moving from an unloading position to a loading completion position which is located on said downstream tape path part and is in a plane lower than the reference plane, said first and second loading means in the respective loading completion positions guiding the tape so that the height of the center line of the tape gradually lowers between said first and second loading means in the respective loading completion positions, and said spiral tape path part extends around the peripheral surface of said tape guide drum over an angle which is substantially equal to or larger than 270°;

driving means for driving each of said first and second loading means to move from the unloading position to the loading completion position during the tape loading operation; and

tape guiding means arranged on a downstream side of said second tape loading mean, for making contact with the tape which is drawn out of said tape cassette by said second loading means and for guiding the tape which has been guided by said second loading means in the loading completion position so as to change a traveling direction of the tape so that the center line of the tape has the same height position as said reference plane in the downstream side of said tape guiding means,

said tape guiding means comprising a guide pole for guiding the tape in the downstream side of said second tape loading means, said guide pole being fallen when said first and second loading means are in the respective unloading positions, and said guide pole being driven by said driving means during the tape loading operation so that said guide pole rises to make contact with the tape from the same side of the tape as the second loading means and to guide the tape in the downstream side of the second loading means.

4,642,714

TAPE CASSETTE LOADING AND EJECTING DEVICE IN A MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

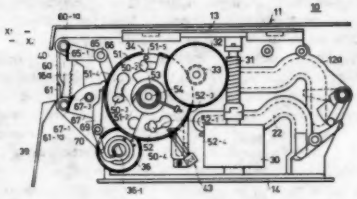
Ritsu Miyamoto, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 7, 1984, Ser. No. 577,857

Claims priority, application Japan, Feb. 8, 1983, 58-16924[U]; Feb. 22, 1983, 58-27900

Int. Cl.[4] G11B *5/008, 15/00, 17/00*

U.S. Cl. 360—96.5 **6 Claims**



1. A tape cassette loading and ejecting device comprising:

a cassette holder for accommodating and holding a tape cassette which is inserted therein;

support means for supporting said cassette holder, said cassette holder being movable relative to said support means between a cassette loading position and a cassette ejecting position;

first stopper means provided on said support means for stopping said cassette holder in said cassette loading position when said cassette holder reaches said cassette loading position;

second stopper means provided on said support means for stopping said cassette holder in said cassette ejecting position when said cassette holder reaches said cassette ejecting position;

moving means provided on at least one of said cassette holder and said support means for moving said cassette holder between said cassette loading position and said cassette ejecting position;

a motor for operating said moving means, said motor rotating in a forward direction during a tape cassette loading operation and rotating a reverse direction during a tape cassette ejecting operation;

rotation transmitting means for transmitting the rotation of said motor to said moving means, said rotation transmitting means comprising an output gear for transmitting the rotation of said motor to said moving means, a first gear which is rotated by the rotation of said motor during the tape cassette loading operation, a second gear which is rotated by the rotation of said motor during the tape cassette ejecting operation, and spring means which is resiliently deformable and is disposed between said first and second gears so that rotary axes of said output gear, said first gear and said second gear are coaxially provided, said output gear rotating unitarily with said first gear during the tape cassette loading operation until said cassette holder is stopped by said first stopper means at said cassette loading position, said first gear continuously rotating but separately from said output gear after said cassette holder reaches said cassette loading position during the tape cassette loading operation so that said spring means is deformed to press said cassette holder to said first stopper means, said output gear rotating during the tape cassette ejecting operation unitarily with said second gear until said cassette holder is stopped by said second stopper means at said cassette ejecting position, said second gear continuously rotating but separately from said output gear after said cassette holder reaches said cassette ejecting position so that said spring means is deformed to press said cassette holder to said second stopper means; and

a switch for stopping the rotation of said motor in an activated state thereof, said switch being activated by the separate rotation of said first gear from said output gear during the tape cassette loading operation and the separate rotation of said second gear from said output gear during the tape cassette ejecting operation.

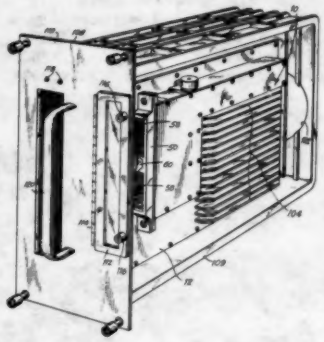
4,642,715

ENVIRONMENTAL CONDITIONING AND SAFETY SYSTEM FOR DISK-TYPE MASS MEMORIES

Don S. Ende, Commack, N.Y., assignor to Miltope Corporation, Melville, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,121
Int. Cl.[4] G11B *23/04*
U.S. Cl. 360—97 **11 Claims**

1. An environmental control appartus for a disk-type mass memory device having at least one sealed head/disk compartment, said apparatus comprising means for exchange of air between said compartment and the atmosphere, means for drying the air drawn in by said air exchange means, means for filtering the air drawn by said air exchange means, means for dissipating heat from within said compartment, means for preventing rapid depressurization of said sealed compartment, means for sensing and signalling a low barometric pressure condition within said compartment and means for interrupting the operation of said mass memory device, said sensing and signalling means comprising an altitiude pressure switch dis-



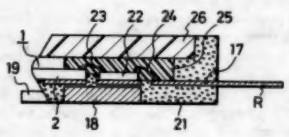
posed within said sealed compartment, said switch including means for generating an interrupt signal for transmittal to said mass memory device.

4,642,716

MAGNETIC TRANSDUCER HEAD ASSEMBLY WITH SUPPORT SYSTEM THEREFOR

Noboru Wakabayashi, Tagajo; Katsuhiko Akiyama, Atsugi; Yutaka Soda, Ebina, and Hiroyuki Uchida, Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 24, 1983, Ser. No. 544,995
Claims priority, application Japan, Oct. 28, 1982, 57-189860
Int. Cl.[4] G11B *5/48, 21/16, 5/127, 5/17*
U.S. Cl. 360—104 **7 Claims**



1. A magnetic transducer head assembly comprising:

a unitary support member comprising a lead frame and a resin molding, said lead frame having a body including a magnetic transducer head mounting portion, an integrated circuit element mounting portion, and a plurality of lead terminals, and said resin molding surrounding said lead frame but leaving exposed said magnetic transducer head mounting portion, said integrated circuit element mounting portion and one end portion of each of the lead terminals;

a multi-channel magnetic transducer head mounted on said magnetic transducer head mounting portions;

an integrated circuit element mounted on said integrated circuit element mounting portions, said integrated circuit element having a reproducing or recording circuit for said magnetic transducer head element; and

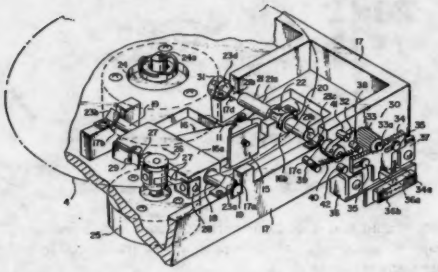
wiring means forming pre-determined electrical connections between said transducer head and said integrated circuit element and between said integrated circuit element and said lead terminals; and

a second resin molding encapsulating said magnetic transducer mounting portion and said integrated circuit mounting portion exposing a surface of said magnetic transducer head facing toward a travelling magnetic recording medium.

4,642,717
MECHANISM FOR LIFTING AND LOWERING MAGNETIC HEAD IN MAGNETIC RECORDING AND REPRODUCING DEVICE

Shinichi Matsuda, and Kazuhisa Seki, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Japan

Filed Mar. 18, 1985, Ser. No. 712,664
Claims priority, application Japan, Mar. 30, 1984, 59-63041
Int. Cl.[4] G11B 5/54
U.S. Cl. 360—105 6 Claims



1. A mechanism for lifting and lowering a magnetic head in a magnetic recording and reproducing device, comprising:

(i) a frame;

(ii) a first guide shaft supported on said frame, and a second guide shaft rotatably supported on said frame and having an eccentric portion;

(iii) a magnetic head carriage supporting a magnetic head thereon and slidably movable along said guide shafts toward a recording/playback position, drive means operably connected to said carriage for sliding said carriage along said guide shafts, said magnetic head carriage having an end held in engagement with said eccentric portion of said second guide shaft.

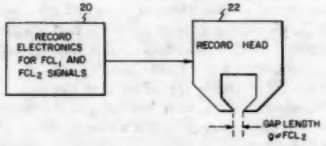
(iv) a positioning plate mounted on said frame; and

(v) a driver mechanism mounted on said frame for rotating said second guide shaft to cause said eccentric portion to display said magnetic head carriage and rotate said magnetic head carriage about said first guide shaft toward said positioning plate whereby a magnetic medium interposed between said positioning plate and said magnetic head permits transducing contact between a magnetic medium and said magnetic head.

4,642,718
OPTIMUM CONTROL OF OVERWRITE BY RECORD GAP LENGTH SELECTION

David E. Wachenschwanz, San Diego, and Frederick J. Jeffers, Escondido, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 28, 1984, Ser. No. 675,574
Int. Cl.[4] G11B 5/25, 5/02
U.S. Cl. 360—119 8 Claims

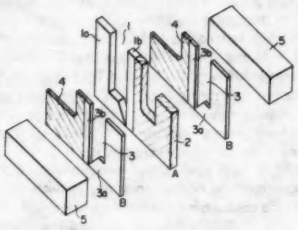


1. In apparatus for efficiently overwriting atop, thereby to erase, a first magnetically recorded signal having a given flux change length by means of a second signal having a second flux change length that is one half as great as that of said first signal, the improvement wherein the length of the gap of the record head of said apparatus is approximately the same as the flux change length of said second signal.

4,642,719
MAGNETIC HEAD ASSEMBLY

Shigetoshi Morita, Saitama; Masaaki Ashizawa, Fukaya, and Hirohide Yamada, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,287
Claims priority, application Japan, Feb. 18, 1982, 57-24802; Feb. 18, 1982, 57-24808; Feb. 18, 1982, 57-24811; Feb. 18, 1982, 57-24823
The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.
Int. Cl.[4] G11B 5/22, 5/16
U.S. Cl. 360—126 9 Claims



1. A magnetic head assembly comprising:

a read/write magnetic head disposed to read and write data, said magnetic head consisting essentially of a Mn-Zn ferrite, and having a magnetic gap formed therein;

a first reinforcing member comprised of a non-magnetic ceramic material bonded by a glass to said magnetic head such that said reinforcing member is in line with said magnetic gap;

a pair of magnetic erasing heads one of which is affixed on each side of said first reinforcing member, each of said pair of erasing heads having a magnetic gap, said erasing heads limiting the width of data written by said read/write magnetic head;

a pair of second reinforcing members comprised of a non-magnetic ceramic material, each of said second reinforcing members being bonded to one of said erasing heads with each of said second reinforcing members being in line with the magnetic gap of the adjacent erasing head and on either side of said read/write magnetic head, wherein the area (Af) defined by the thermal expansion coefficient curve of said Mn-Zn ferrite in the temperature range between room temperature and the softening point of said glass and the area (Ac) defined by the thermal expansion coefficient curve of said non-magnetic material comprising said first reinforcing member in the same temperature range satisfy the following condition:

$$-3.8\times10^{-4}\leqq Af-Ac\leqq1.8\times33\ 10^{-4}.$$

4,642,720

MAGNETIC HEAD COMPRISED OF AN IMPROVED BASE SUBSTANCE FOR HIGH DENSITY MAGNETIC RECORDING

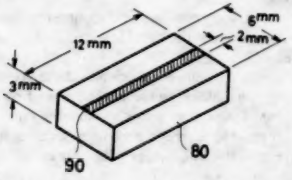
Nobuyuki Kishine; Tetsuya Imamura, both of Tochigi; Michihide Yamauchi, Wakayama, and Tsuyoshi Ootani, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 3, 1983, Ser. No. 548,566

Claims priority, application Japan, Nov. 4, 1982, 57-194013; Jan. 11, 1983, 58-3124; Feb. 8, 1983, 58-19293; Mar. 15, 1983, 58-41471

Int. Cl.[4] G11B *5/187, 5/147*

U.S. Cl. 360—126 12 Claims



1. A magnetic head comprising a converter for writing or reading on a magnetic recording medium, the converter including a converter support made of an aggregate of a glass-like carbon material or a composite material comprising an aggregate of glass-like carbon material and thermosetting resin and/or carbonaceous filler.

4,642,721

MAGNETIC TAPE CARTRIDGE WITH INCREASED DATA PACKING DENSITY

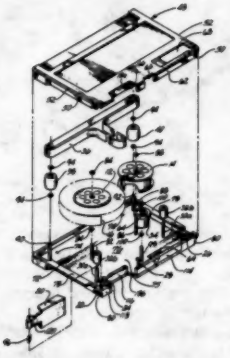
Harold H. Georgens, Rancho Santa Fe, and Dean L. Christensen, Bonsall, both of Calif., assignors to Data Electronics, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 533,640, Sep. 19, 1983. This application Dec. 3, 1984, Ser. No. 677,197

The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.

Int. Cl.[4] G11B *23/02*

U.S. Cl. 360—132 5 Claims



1. Apparatus for increasing the data recording track packing density in a belt-driven tape cartridge of the type which includes a cartridge housing, a pair of reels in the housing for holding a magnetic tape, an endless belt extending around portions of the carried on the reels, and a belt-driving roller for engagement with a drive capstan of a tape transport for driving the belt to move the tape past a magnetic read/write head in the tape transport and in contact with a portion of the tape in the cartride housing, in which the cartridge housing comprises a base plate joined to a cover plate for forming the cartridge housing, opposing side flanges extending at an intermediate elevation along opposite sides of the cartridge housing, in which opposing upper grooves extend along opposite side walls of the cover plate at an elevation above the side flanges, in which the side flanges extend along opposite side walls of the base plate, and in which opposing lower recessed regions extend along the opposite side walls of the base plate below the side flanges, the side walls of the cover plate and the base plate being juxtaposed when the two base plates are joined to form the cartridge housing, and in which the lower recessed regions of the base plate extend along opposite sides of a stepped down recessed wall portion of the base plate for providing sufficient depth to the internal spacing within the cartridge housing below the side flanges of the housing for permitting the tape contained within the housing to be up to ½-inch in width, the tape being wound on reels within the cartridge housing of sufficient width to accommodate the width of the tape.

4,642,722

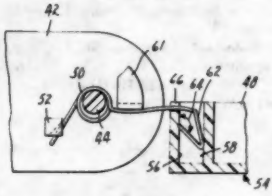
SPRING MECHANISM FOR LID OF VIDEO CASSETTE

Charles D. Gebeke, White Bear Lake, and Mark W. Weavers, Little Canada, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 7, 1984, Ser. No. 577,777

Int. Cl.[4] G11B *23/02, 23/04, 15/32;* G03B *1/04*

U.S. Cl. 360—132 15 Claims

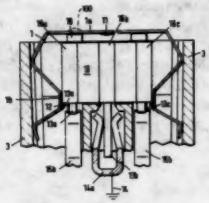


1. A cassette including a visor-type lid having a corner part at which a pin journals the lid to a sidewall of the cassette for pivotal movement between open and closed positions of the lid relative to the sidewall, a coil spring having a helical central portion around the pin and opposite first and second end portions, and means for fixing said first end portion to said lid and said second end portion to said sidewall to bias the lid toward the closed position, wherein said means for fixing said second end portion to said sidewall comprises said sidewall including walls defining a well having an opening and opposed interior surfaces, with one of said opposed interior surfaces facing toward said pin and the other of said opposed interior surfaces facing away from said pin, and said second end portion is bent to form an end part ending at a tip, which end part is positioned in said well and is at least partially under compression between said opposed interior surfaces of the well to bias the tip into engagement with one of said opposed interior surfaces while forming an obtuse angle between the portion of the end part adjacent the tip and the portion of the opposed interior surface contacted by the tip between the tip and said opening.

4,642,723
A HEAT PROTECTION DEVICE FOR OVERVOLTAGE ARRESTER MAGAZINES

Peter Achtaig, and Gunter Hegner, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 618,997
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323687
Int. Cl.[4] H02H 3/22
U.S. Cl. 361—124 6 Claims

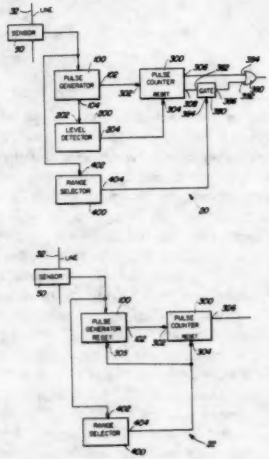


1. A heat protection device for overvoltage arresters for use in telecommunications, comprising a resilient element having:
a solder preform;
a switch contact; and
an S-shaped clip spring, one leg thereof being supported by the solder preform and the switch contact and the other leg thereof having latching means including two resilient tabs, said latching means engaging in an overvoltage arrester magazine beneath a two-way overvoltage arrester, the clip spring being supported by the inner wall of the overvoltage arrester magazine.

4,642,724
TRIP SIGNAL GENERATOR FOR A CIRCUIT INTERRUPTER

Joseph W. Ruta, Elmhurst, Ill., assignor to S&C Electric Company, Chicago, Ill.

Continuation-in-part of Ser. No. 506,943, Jun. 22, 1982. This application Oct. 3, 1984, Ser. No. 658,239
Int. Cl.[4] H02H 3/093
U.S. Cl. 361—96 16 Claims

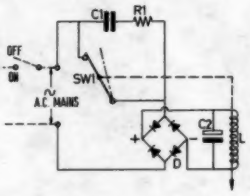


1. An apparatus for producing a trip signal in response to the occurrence of overcurrent in an alternating-current line, the overcurrent being greater than a threshold current, the trip signal being produced after a time delay that is inversely related to such overcurrent, said apparatus comprising:
pulse generator means for generating pulses at a rate proportional to the overcurrent in the line;
counter means having first and second outputs for counting the pulses generated by said pulse generator means and producing a first trip signal at said first output after said counter means has counted a first selected number of the pulses, and producing a second trip signal at said second output after said counter means has counted a second selected number of pulses, the first selected number of pulses being greater than the second selected number of pulses;
reset means for resetting said counter means to an initial count whenever the current in the line is below a selected level;
range selector means responsive to the current in the line for generating a blocking signal that is in a first state when the current in the line is below a transition current higher than the threshold current and in a second state when the current in the line exceeds the transition current; and
gate means responsive to the blocking signal, said gate means having an input for receiving said second trip signal at said second output, said gate means also having an output to which is passed said second trip signal when the blocking signal is in the second state, and said gate means not passing to its output the second trip signal when the blocking signal is in the first state.

4,642,725
DC SOLENOID ACTUATOR CIRCUITS

David Vincent, Burgess Hill, and Aloysius G. Mahabir, Crawley, both of United Kingdom, assignors to Vent-Axia Limited, United Kingdom

Filed Oct. 3, 1985, Ser. No. 783,417
Claims priority, application United Kingdom, Oct. 4, 1984, 8425120
Int. Cl.[4] H01F 7/18
U.S. Cl. 361—154 3 Claims



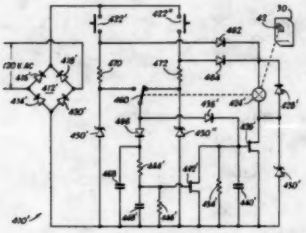
1. A DC solenoid actuator circuit comprising:
a DC solenoid suitable for operating an armature;
a rectification circuit connectable to an AC supply and connected to the DC solenoid to apply a DC actuating voltage for the solenoid;
capacitor means connected to said solenoid, the impedance values of the capacitor means and solenoid being selected to produce resonance whereby an over-rated actuating voltage is applied thereto to operate the armature; and
switch means connected by a mechanical link with the armature and actuated at a predetermined point during the initial armature stroke to interconnect with the rectification circuit by way of reducing means to reduce said over-rated voltage to acceptable operating voltage for said DC solenoid.

4,642,726

SOLENOID OPERATOR CIRCUIT FOR MOLDED CASE CIRCUIT BREAKER

Joseph J. Matsko; Kurt A. Grunert, both of Beaver, and Bruce R. Terhorst, Carnegie, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,055
Int. Cl.[4] H01H 47/18
U.S. Cl. 361—198 4 Claims



1. Electrical apparatus comprising:

a circuit breaker adapted to be placed in a full open position or in a full closed position,

an electrically operated solenoid coupled to said circuit breaker for positioning said circuit breaker in said full open and full closed positions,

means for providing a solenoid actuation signal,

means responsive to said actuation signal for energizing said solenoid,

electronic timing circuit means coupled to said providing means for rendering said energizing means operative to energize said solenoid for a predetermined variable time interval, said electronic timing circuit means being responsive to a signal representative of the solenoid energizing voltage for increasing said time interval in response to a decrease in said solenoid energizing voltage, and

said means for providing a solenoid actuation signal comprising first and second switches electrically coupled to said energizing means and to said electronic timing circuit means, said first switch being operative to cause said solenoid to position said circuit breaker in said full open position and said second switch being operative to cause said solenoid to position said circuit breaker in said full closed position, said means for providing a solenoid actuation signal further comprising a third switch electrically coupled to said first and second switches, to said energizing means and to said electronic timing circuit means, said third switch being mechanically coupled to said solenoid for actuation thereby to alternately connect said first switch and said second switch to said energizing means and said electronic timing circuit means upon successive energizations of said solenoid.

4,642,727

ELECTROSTATIC DISCHARGE PROTECTION FOR ELECTRONIC EQUIPMENT

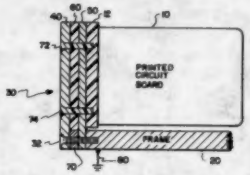
Samir K. Dalal, El Paso, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1985, Ser. No. 706,820
Int. Cl.[4] H05F 3/02
U.S. Cl. 361—212 8 Claims

1. Apparatus for use with a housing containing sensitive electronic equipment to protect the equipment against damage from radio frequency interference which may be generated when a discharge of electrostatic energy occurs from a person touching the apparatus comprising:

a sandwich structure including a pair of conductive plates with an insulator therebetween and means electrically connecting said plates at only one end;

means adapted to mount the sandwich structure on the housing between the equipment and the person so that the person will normally touch the sandwich structure first; and



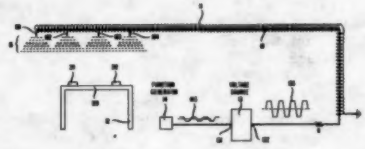
means connecting the one end of the sandwich structure to a source of reference potential.

4,642,728

SUPPRESSION OF ELECTROSTATIC CHARGE BUILDUP AT A WORKPLACE

Burton A. Unger, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 655,767, Oct. 1, 1984. This application Oct. 24, 1985, Ser. No. 790,801
Int. Cl.[4] H05F 3/04
U.S. Cl. 361—213 9 Claims



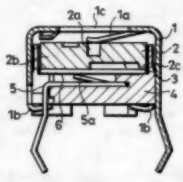
1. A method for processing a workpiece at a workplace comprising injecting successive showers alternately of positive and negative ions into a region of ambient atmosphere located above the workplace while the workpiece is located on a surface of the workplace for being processed thereat, each of the showers being generated during a separate time interval of the order of 1 second in duration whereby electrostatic charge buildup on the workpiece is suppressed by the showers.

4,642,729

VARIABLE PORCELAIN CONDENSER STRUCTURE

Mikio Abe, Takizawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed May 29, 1986, Ser. No. 868,793
Claims priority, application Japan, May 29, 1985, 60-79268[U]
Int. Cl.[4] H01G 5/06
U.S. Cl. 361—293 3 Claims



1. A variable porcelain condenser structure comprising:

a bottomed, generally cylindrical insulating frame;

a stator of a ceramic dielectric member having a stator electrode formed on one side and mounted on the bottom of said insulating frame;

a rotor of a metallic material having a generally semicircular rotor electrode formed on one side and mounted on the bottom of said insulating frame through said stator;

a case of a metallic material including leg means for fixing said insulating frame and elastic means associated with said leg means for holding said rotor, said stator and said insulating frame in elastic contact with one another and for providing an electrical connection between said case and said rotor; and

a stator terminal held in said insulating frame and having its leading end contacting electrically with the stator electrode of said stator,

whereby the opposing areas of said stator electrode and said rotor electrode through said stator can be varied to provide an arbitrary capacity when said rotor is turned relative to said stator.

4,642,730

ELECTRICAL INSULATING OIL AND OIL-FILLED ELECTRICAL APPLIANCES

Atsushi Sato, Tokyo; Keiji Endo, Yokosuka; Shigenobu Kawakami, Ichikawa; Eiichi Matsuzaka, Kawasaki, and Satoshi Narui, Ayase, all of Japan, assignors to Nippon Petrochemicals Company, Ltd., Japan

Filed Jul. 30, 1985, Ser. No. 760,402

Claims priority, application Japan, Aug. 3, 1984, 59-163550

Int. Cl.[4] H01G *4/22*; H01B *3/22*

U.S. Cl. 361—315 **23 Claims**

1. An electrical insulating oil which comprises a fraction having boiling points in the range of 350° to 450° C. that is prepared by disproportionating a by-product oil fraction having boiling points in the range of 260° to 320° C. and containing diarylalkanes at temperatures in the range of 20° to 500° C. in the presence of a disproportionation catalyst, wherein said by-product oil fraction is obtained in the process to produce alkylated benzene or toluene by alkylating benzene or toluene with ethylene in the presence of an alkylation catalyst.

4,642,731

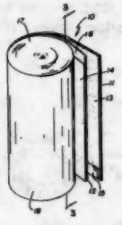
DIELECTRIC FLUID FOR A CAPACITOR

Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 16, 1986, Ser. No. 875,055

Int. Cl.[4] H01G *4/22*

U.S. Cl. 361—319 **5 Claims**



3. A capacitor comprising:

a housing;

a pair of convolutely wound metallized film electrodes enclosed within said housing; and

a dielectric liquid excluding gasses from said housing and including glyceryl triacetate and about 30 to 90 vol. percent of epoxidized soybean oil.

4,642,732

DIELECTRIC CERAMIC COMPOSITION AND METHOD OF PRODUCING SAME, AND A MONOLITHIC CAPACITOR

Masaaki Ikeda; Wataru Takahara; Junichi Iteguchi; Hiroyuki Satoh, and Shyuji Itoh, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 25, 1986, Ser. No. 855,572

Claims priority, application Japan, Apr. 26, 1985, 60-89999

Int. Cl.[4] H01G *4/10, 7/00*; C04B *35/48*

U.S. Cl. 361—321 **12 Claims**

2. A monolithic capacitor comprising:

a plurality of layers of dielectric ceramic composition $(Ba_{1-x}Sr_xO)_a Ti_{1-y}Zr_yO_2+\alpha((1-z)MnO+z\text{-}CoO)+\beta((1-t)A_2O_5+tL_2O_3)+wSiO_2$, wherein:

A=Nb, Ta, V;

L=Y or a rare earth element;

$0.002 \leqq x+y+1.7\alpha z \leqq 0.250$;

$0.000 \leqq z \leqq 0.980$;

$0.990 \leqq a \leqq 1.020$;

$0.010 \leqq \alpha \leqq 15.00$ (mol %);

$0.01 \leqq \beta/\alpha \leqq 0.55$;

$0.000 \leqq t \leqq 0.980$; and,

$0.002 \leqq w \leqq 1.00$ (wt %);

a plurality of layers of base metal electrodes, each layer being bonded between a pair of the dielectric ceramic compositions; and,

a pair of external electrodes electrically and selectively connected to the base metal electrodes.

4,642,733

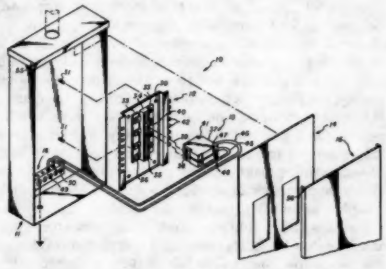
LOADCENTER "PLUG-IN" SURGE PROTECTOR

Ezra L. Schacht, 1620 W. Main St., Houston, Tex. 77006

Filed Apr. 25, 1985, Ser. No. 727,291

Int. Cl.[4] H02H *9/00*

U.S. Cl. 361—363 **3 Claims**



1. A surge-protection device for electrical wiring systems including "plug-in" breakers within a loadcenter enclosure, the loadcenter enclosure containing within it:

(i) a plurality of branch circuit breakers with operating levers;

(ii) an interior mounting pan on which said breakers are mounted;

(iii) a plurality of buses, the buses insulatively mounted upon the interior mounting pan, said breakers electrically connected to the buses;

(iv) mounting pan supporting means;

(v) a dead-front panel, having apertures aligned with the operating levers of said breakers and means securing the dead-front panel to the enclosure;

(vi) a front cover over said dead-front panel;

(vii) a system neutral and grounding bus in said enclosure;

the surge protection device comprising, in combination:

(a) a housing containing a surge protector mounted in said enclosure, said housing having a top, a bottom, a front, a rear, and two sides, said housing being substantially similar to enclosures of said breakers, having connection

means connected to said buses, having retention means attached to said mounting pan, and having load side terminals;

(b) means for promptly dissipating energy of said electrical surge with minimal damage to said surge protective device and electrical equipment to be protected, said dissipating means being connected between said busses and said load terminal of said surge protecting device, said load terminal having connection means connected to said neutral and grounding bus through adequate current carrying means; and

said surge protector housing having means in engagement with said dead front.

4,642,734

INTEGRATED CIRCUIT CHIP SWITCH

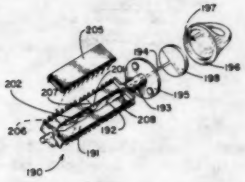
James R. Anderson, Minneapolis, Minn., assignor to Research, Incorporated, Eden Prairie, Minn.

Continuation of Ser. No. 728,152, Apr. 30, 1985, abandoned, which is a continuation of Ser. No. 505,295, Jun. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 300,965, Sep. 10, 1981, Pat. No. 4,420,794. This application Dec. 9, 1985, Ser. No. 807,106

The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 361—380 **5 Claims**



2. A carrier and dual in-line package used in connection with a wire wrap socket having a plurality of electric contact posts depending therefrom and supportable in a housing, said carrier comprising a base having a generally planar exterior surface defined by a platform having spaced edge portions with edge surfaces, a plurality of grooves defined in each of the edge portions, said grooves being defined inwardly from the edge surfaces a desired amount and spaced from adjacent grooves a distance corresponding to the spacing of the leads of said dual in-line package, said base including a center portion having means for supporting the base for rotation about a central longitudinal rotational axis, to permit rotating the base about the axis to move the edge portions in an arc as the base is rotated, said dual in-line package having a plurality of chip leads on opposite edges thereof being mounted on said planar exterior surface with each of the leads thereof in one of the grooves on the base and bent over the edge portions to retain such dual in-line package supported on the exterior of the planar exterior surface with the chip leads exposed on the exterior of the base, said carrier having a handle member removably attached to the base, means for mounting a battery on said removable handle member, said base having a recess formed therein, circuit component means usable with the dual in-line package mounted in the recess, and first means coupled between the handle and the circuit component means for connecting the circuit component means with a battery in the handle when the handle is attached to the base, and second means for coupling the circuit component means with selected leads of the dual in-line package supported on said base, said first means being disconnectable when the handle is removed from the base.

4,642,735

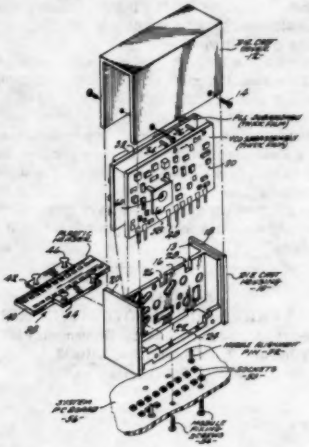
FREQUENCY SYNTHESIZER MODULE

Roy F. Hodsdon, and Robert K. Bell, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Feb. 27, 1984, Ser. No. 583,732

Int. Cl.⁴ H05K *9/00*

U.S. Cl. 361—424 **19 Claims**



1. A frequency synthesizer module comprising:

a two-piece metallic-die cast housing and cover assembly including a an internal metallic wall disposed between two end walls which divides the space enclosed thereby into two isolated cavities;

a VCO circuit sub-assembly on a first substrate which is solder-affixed onto a first side of said internal metallic wall;

a PLL circuit sub-assembly on a second substrate which is removably affixed with adhesive into position adjacent a second side of said internal metallic wall, each said circuit sub-assembly being electrically interconnected directly to the other by at least one conductor passing through at least one aperture in said internal metallic wall; and

said housing includes said two end walls transverse to said internal metallic wall which is centrally disposed therebetween and wherein said housing further includes two mounting brackets, each extending generally parallel to said internal metallic wall and located between respective lower inside corners of said end walls.

4,642,736

LIGHT DIFFUSER

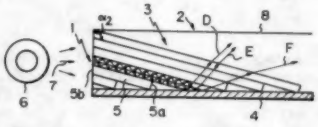
Tokihiko Masuzawa, Kani; Yoshitaka Kageyama, and Norizou Tomita, both of Nagoya, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Apr. 17, 1985, Ser. No. 724,275

Claims priority, application Japan, Jul. 2, 1984, 59-136691; Oct. 29, 1984, 59-227537

Int. Cl.⁴ F21V *7/04*

U.S. Cl. 362—31 **14 Claims**



1. An edge lighting type light diffuser comprising:

(a) a plane of light incidence;

(b) light transmitting means which, in use, receive light rays from said plane of light incidence;
(c) a plane of light emission through which the light rays are emitted; and
(d) means for reflecting the light rays transmitted through said light transmitting means,
(e) said light transmitting means comprising a plurality of light-transmitting plates having planar surfaces superimposed on each other, each one of said plurality of light-transmitting plates having:
(i) a first edge against which light is incident during use of the diffuser, said first edges collectively comprising said plane of light incidence, and
(ii) a second edge normal to the surfaces of said light transmitting plates, said second edges being spaced from each other to form a staircase structure, each of said second edges being inclined relative to said plane of light incidence, and
(f) said means for reflecting the light rays being located in linear contact with said second edges of said light transmitting plates.

4,642,737

MOTOR VEHICLE HEADLIGHT INDICATOR

George N. Meyers, Jr., 5418 21st West, Bradenton, Fla. 33507

Filed Jul. 2, 1985, Ser. No. 751,233
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 362—61 11 Claims

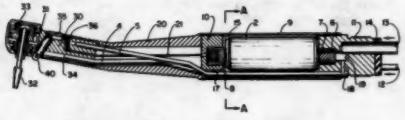
1. A motor vehicle light indicator comprising:
a transparent, solid, light conveying conduit;
a suction cup for holding one end of said light conveying conduit on said light to face the radiation of said light; and
said conduit so configured that it bends through an angle of more than 90 degrees so that the other end of said conduit will be in the field of view of the operator of said motor vehicle.

4,642,738

ILLUMINATED DENTAL DRILL

Moshe Meller, 20 Rachel Street, Haifa, Israel (34402)

Filed Jan. 16, 1986, Ser. No. 819,871
Claims priority, application Israel, Feb. 21, 1985, 74405
Int. Cl.[4] A61C *1/00, 3/00*
U.S. Cl. 362—119 11 Claims



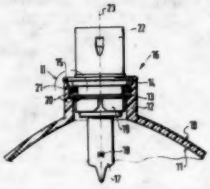
1. Illuminating means for a high-speed drill handpiece, said handpiece comprising an oblong casing in the shape of a cylindrical rear part and a front part, an air-propelled turbine wheel positioned in said front part adapted to drive a burr directly connected to said turbine wheel, and air- and water-duct means, extending from said rear part to said front part, said illuminating means comprising: a light source positioned in said front part in a position effecting light rays to be directed towards the tip of said burr; an electric cell exchangeably placed in a chamber in the cylindrical rear part of said casing, said chamber being positioned eccentrically to the axis of said rear part and being openable through the cylindrical periphery of said rear part, permitting sideways insertion and removal of said electric cell; a first contact point mounted in the rear of said chamber adapted to contact the rear terminal of said electric cell and conductively connected to a first bulb terminal; a second contact point firmly fixed in the front of said chamber and adapted to contact the front terminal of said cell and conductively connected to a second bulb terminal; and switching means adapted to energize or de-energize said light source.

4,642,739

BULB ASSEMBLY FOR A VEHICLE HEADLIGHT

Hans Daumüller, Bodelshausen, and Walter Weber, Weil der Stadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 713,261
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1984, 3426712
Int. Cl.[4] H01R *33/00*
U.S. Cl. 362—226 2 Claims



1. A bulb assembly for a vehicle headlight, comprising a reflector having a sleeve-shaped lamp holder; a bulb insertable into said lamp holder and including a housing receiving a filament, a plug portion having an end portion and a socket of insulating material in which said housing is inserted at said end portion, said socket having a peripheral surface and being formed at said surface with an annular groove; and an O-ring received in said groove, said groove having a base, said lamp holder having an inner surface encircling said socket and O-ring, said O-ring in assembly abutting against said base and also adjacent said inner surface so as to seal said bulb against said reflector, said groove extending in a direction of an axis of said reflector by a predetermined distance and said inner surface also extending in said direction by a predetermined distance, the predetermined distance of extension of said groove and said inner surface being selected so that upon pulling said socket out from said lamp holder in said direction said O-ring is in contact only with said inner surface and said base such that said O-ring executes a rolling motion.

4,642,740

CONSTANT MAGNIFICATION LIGHT COLLECTION SYSTEM

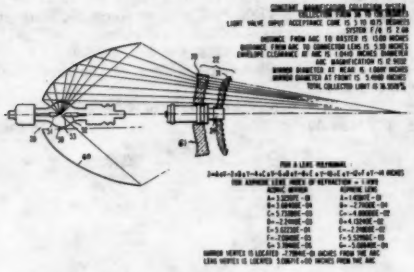
Thomas T. True, Camillus, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Oct. 22, 1984, Ser. No. 663,656
Int. Cl.[4] F21V *7/00;* H04N *5/74*
U.S. Cl. 362—268 10 Claims

1. In a light projection system for projecting light from a source, the improvement in a light collection system which satisfies the relationships for constant tangential magnification for all zones so that the image of the source just fills the pupil of the projection system thereby giving the best source utilization in all zones, said light collection system comprising:
a reflector positioned behind the source; and

a correcting refractor positioned in front of the source;

the reflector having a reflection relationship to its surface contour and the refractor having a ray bending relationship to its surface contour such that together, they achieve the overall relationship



$D\phi_1/d\phi_2 = \text{constant}$

where ϕ_1 is the collection angle and ϕ_2 is the final angle leaving the refractor.

4,642,741

FLUORESCENT LIGHTING SYSTEM

David W. Cohn, Chagrin Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 3, 1985, Ser. No. 771,741
Int. Cl.[4] F21V *17/02*
U.S. Cl. 362—320 **8 Claims**

1. A fluorescent lamp system comprising:

an elongated generally circular fluorescent lamp; and

conformable reflector means securely attached to said lamp and extending substantially parallel therewith along substantially the entire length of said lamp for directing light emitted by said lamp in a predetermined direction; said conformable reflector means comprising a sheet of material sufficiently compliant to be wrapped closely around said lamp or alternatively and selectively to be extended to a desired position at which at least a portion of said reflector means is spaced from said lamp to direct substantially the entire light output of said lamp in a desired direction relative to said lamp.

4,642,742

LUMINAIRE WITH PIVOTAL COVER MEMBER HAVING COMPRESSIBLE GASKET

Hendrik A. J. de Vos, and Elzear R. Labouliere, both of Swansea, Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Apr. 4, 1985, Ser. No. 719,946
Int. Cl.[4] F21V *17/00*
U.S. Cl. 362—375 **12 Claims**

1. A luminaire comprising:

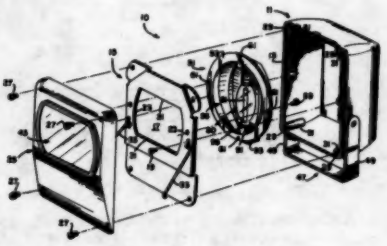
a housing of substantially boxlike configuration and defining an opening therein:

a substantially planar component mounting plate secured to said housing substantially across said opening and including an aperture therein defined by two pairs of opposed sides, the sides of a first of said pairs being of substantially straight configuration and the sides of a second of said pairs being of substantially curved configuration:

a reflector positioned on said component mounting plate adjacent said aperture;

a lamp extending within said reflector; and

a cover member pivotally located on said housing for providing a cover for said opening upon closure thereof, said cover including a lens therein and a compressible gasket located substantially about said lens, said closure of said cover causing compression of said gasket against said mounting plate substantially about said aperture, said compression of said gasket providing a seal about said lens and also assisting in retaining said lens in position within said cover member.

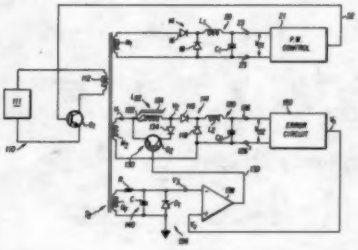


4,642,743

POWER SUPPLIES WITH MAGNETIC AMPLIFIER VOLTAGE REGULATION

Jerry K. Radcliffe, Owego, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 5, 1985, Ser. No. 762,648
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 **18 Claims**



1. A power supply circuit comprising:

a source of alternate positive and negative voltage pulsations;

a saturable reactor having a reactor winding and a saturable core, said reactor winding being coupled between said source and an output terminal;

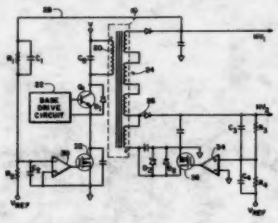
rectifier means poled to couple current through said reactor winding during pulsations of one polarity, said core being driven to saturation during said one of said pulsations; and

means for resetting said core during pulsations of the other polarity comprising clamping means which, when actuated, holds said core at a reset point on its B-H characteristic, said reset point determining the time of saturation during the next of said one pulsations.

4,642,744
REGULATED HIGH VOLTAGE SUPPLY

Wayne D. Thomas, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 26, 1984, Ser. No. 674,887
Int. Cl.[4] H02M 3/335
U.S. Cl. 363—21 6 Claims



1. A regulated high voltage supply comprising:

means for generating a first and a second high voltage output, said generating means including a primary circuit, and a secondary circuit having a secondary winding wherein said first and second high voltage outputs are provided from the same said secondary winding;

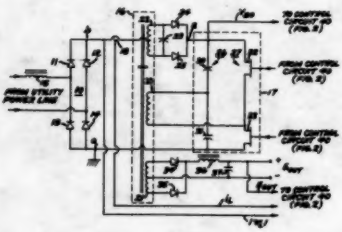
first means for pass regulating said first high voltage output in the primary circuit; and

second means for offset regulating said second high voltage output in the secondary circuit including means for providing a reference voltage for a terminal of said secondary winding, said first and second regulating means interacting with each other to correct for fluctuations in said first and second high voltage outputs.

4,642,745
POWER CIRCUIT WITH HIGH INPUT POWER FACTOR AND A REGULATED OUTPUT

Robert L. Steigerwald, Burnt Hills, and William P. Kornrumpf, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1986, Ser. No. 835,708
Int. Cl.[4] H02M 5/458
U.S. Cl. 363—37 16 Claims



1. A power converter comprising:

AC rectifying means adapted to be coupled to an AC power line for providing a rectified AC voltage;

converting means having a pair of input terminals coupled to said AC rectifying means, said converting means providing an AC signal at its output terminals, said AC signal having a frequency greater than the frequency of the voltage on said AC power line;

a transformer having a primary winding, a closely-coupled secondary output winding and a loosely-coupled secondary boost winding, said primary winding being coupled to the output terminals of said converting means, said boost winding being coupled to said AC rectifying means and to one of said input terminals of said converting means; and

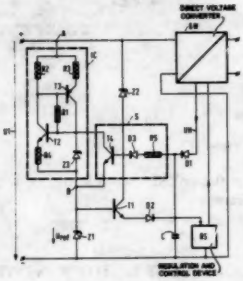
a resonant capacitor coupled to said boost winding;

whereby the input current amplitude of said power converter depends on the frequency of said AC signal.

4,642,746
CIRCUIT ARRANGEMENT FOR FEEDING THE REGULATION AND CONTROL DEVICE OF A REGULATED DIRECT VOLTAGE CONVERTER

Walter Lösel, Fürth-Vach, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 30, 1985, Ser. No. 739,580
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421133
Int. Cl.[4] H02J 11/00; H02P 13/00
U.S. Cl. 363—49 16 Claims



1. A circuit arrangement for energizing a regulation and control device of a regulated direct voltage converter, comprising:

(a) a first transistor that is turned on when the input voltage of the direct voltage converter is switched on whereby emitter current of said transistor charges a charging capacitor, said capacitor supplying the regulation and control device;

(b) as soon as the direct voltage converter operates, it supplies a sufficiently large auxiliary voltage with which the charging capacitor is charged further via a first diode thereby to cut-off the first transistor,

(c) a constant-current circuit which, together with the voltage source for the input voltage of the direct voltage converter constitutes a constant-current source that can be switched on and off and between whose load terminals a first Zener diode is coupled, the series arrangement of the base-emitter diode of the first transistor and the charging capacitor being connected parallel to the first Zener diode;

(d) a threshold value switch respectively which switches off and on the constant-current source when the voltage at the charging capacitor exceeds or falls below by a given amount the reference voltage produced by the first Zener diode; and

(e) a reference voltage being maintained at the first Zener diode, even when the current source is switched off, by means of a current in a current path which comprises a first high-ohmic resistor and the first Zener diode coupled to the input voltage of the direct voltage converter.

4,642,747
FAULT-PROTECTION APPARATUS FOR STATIC AC-TO-AC CONVERTERS AND UNRESTRICTED FREQUENCY CHANGER (UFC) SYSTEM INCLUDING SUCH FAULT-PROTECTION APPARATUS

Gyu-Hyeong Cho, Seoul, Rep. of Korea, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 22, 1985, Ser. No. 736,897
Int. Cl.[4] H02H 7/125
U.S. Cl. 363—54 10 Claims

1. In an Unrestricted Frequency Changer (UFC) system for

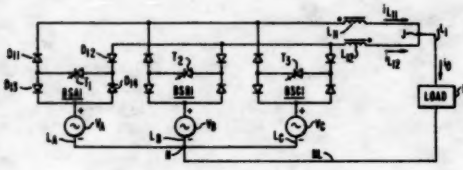
converting AC power from AC input lines to AC output lines, the combination of:

a plurality of diode bridges;

each of said bridges being formed of two pairs of branches associated with respective ones of said input and output AC lines and including a power switch mounted in parallel to said pairs of branches and selectively controlled for operating with the associated diodes as a bilateral switch between input and output AC lines;

a pair of inductors associated with at least two of said diode bridges;

one inductor being connected to one diode of one branch in each of said two diode bridges;



the other of said inductors being connected to the other diode of said one branch in each of said two diode bridges;

said two inductors being further connected in common to one of said input and output AC lines;

said one AC line being associated in common with said two bridges and said one branch thereof;

the other branch of diodes in each bridge being connected to a corresponding AC line of the other of said input and output AC lines, as associated thereto;

whereby upon the occurrence of a fault in said UFC system, said two inductors are limiting the rate of rise of the fault current while having a minimal effect on the operation of the UFC system under steady state conditions.

4,642,748

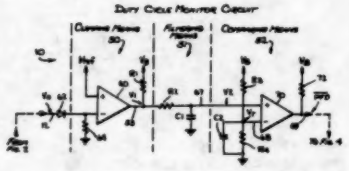
MONITORING SWITCH MODE CONVERTER PERFORMANCE UTILIZING DUTY CYCLE

Glenn D. Kirk, El Toro, Calif., assignor to MAI Basic Four, Inc., New York, N.Y.

Filed Aug. 29, 1985, Ser. No. 770,838

Int. Cl.[4] H02M 3/335

U.S. Cl. 363—56 **22 Claims**



4. A circuit for detecting the occurence of an abnormal condition in a switch mode converter comprising first means adapted to receive an input signal having a duty cycle related to the operating duty cycle at which the converter is operating and in response thereto providing a first electrical signal which is substantially a DC signal during a given cycle of the converter and has a DC value during the given cycle of the converter related to the duty cycle of the converter, second means coupled to receive the first signal and a second electrical signal having a DC value related to a threshold duty cycle indicative of an abnormal condition in the operation of the converter and in response thereto generating a third signal when the value of the first signal is at or passes through the value of the second signal.

4,642,749

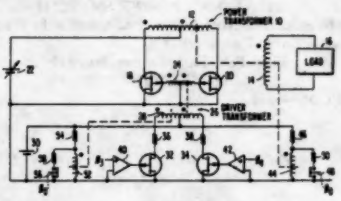
REPLICA DRIVER TRANSFORMER FOR INVERTER CIRCUIT

Charles S. Walker, King County, Wash., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Aug. 19, 1986, Ser. No. 897,801

Int. Cl.[4] H02H 7/122

U.S. Cl. 363—56 **14 Claims**



1. A power inverter circuit comprising:

at least a first switching transistor having first and second main conducting electrodes and a control electrode;

a power transformer having a primary winding and a secondary winding;

a load connected to the secondary winding of said power transformer;

a first power supply connected in series with the primary winding and the first and second main conducting electrodes of said first switching transistor;

at least a first driver transistor having first and second main conducting electrodes and a control electrode;

a replica driver transformer having a primary winding and a secondary winding, the secondary winding being connected to the control electrode of said first switching transistor, said replica driver transformer being a miniature version of said power transformer but designed to saturate before said power transformer;

a second power supply connected in series with the primary winding of said replica driver transformer and the main conducting electrodes of said first driver transistor; and

driver circuit means connected to the control electrode of said first driver transistor for turning said driver transistor on and off.

4,642,750

CIRCUIT ARRANGEMENT FOR SWITCHING A CURRENT IN AN INDUCTIVE LOAD

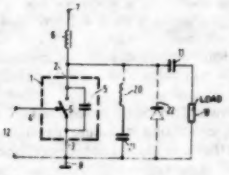
Hubert C. Raets, Nieuwenhagen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 22, 1985, Ser. No. 757,579

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427493

Int. Cl.[4] H02H 7/122

U.S. Cl. 363—56 **13 Claims**



1. A circuit arrangement for switching a current through a load which comprises an inductive component and a resistive component, comprising at least one semiconductor switch that periodically switches the current through the load at a switching frequency by means of its main current path switched alternately to the conductive and the non-conductive state, the

semiconductor switch having a parasitic capacitance, a voltage-limiting element connected in parallel with the semiconductor switch for limiting the voltage applied to said switch, characterized in that the voltage-limiting element has an inductive input impedance at the switching frequency.

4,642,751

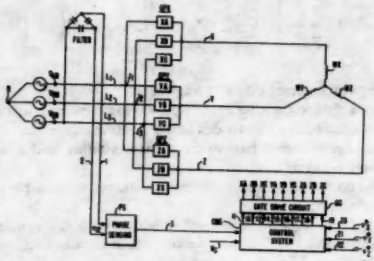
HIDDEN DC-LINK AC/AC CONVERTER USING BILATERAL POWER SWITCHES

Colin D. Schauder, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 14, 1986, Ser. No. 829,739

Int. Cl.[4] H02M *5/22*

U.S. Cl. 363—159 **5 Claims**



1. An AC/AC converter connected between AC input lines and AC output lines comprising a plurality of bilateral power switches connected in groups associated with the respective AC output lines, the bilateral power switches in each group being associated with the respective AC input lines, whereby each bilateral power switch is connected between one AC input line and one AC output line,

first means being provided for controlling the bilateral switches of each group to generate on each associated AC output line a DC voltage, and

second means being provided for controlling the conduction of said bilateral switches to modulate the DC voltage between two consecutive groups to generate an AC voltage between the corresponding AC output lines.

4,642,752

PROGRAMMABLE AUTOMATIC MANIPULATOR SYSTEM

Franco Debarbieri, Genoa; Roberto Montorsi, Sesto Calende, and Giancarlo Zaramella, Turin, all of Italy, assignors to Armco, Inc., Middletown, Ohio

Filed Nov. 30, 1984, Ser. No. 676,525

Claims priority, application Italy, Nov. 30, 1983, 12685 A/83

Int. Cl.[4] G05B *19/00*

U.S. Cl. 364—167 **18 Claims**

1. A programmable automatic manipulator apparatus adapted to move along a path defined on a workpiece, said apparatus comprising:

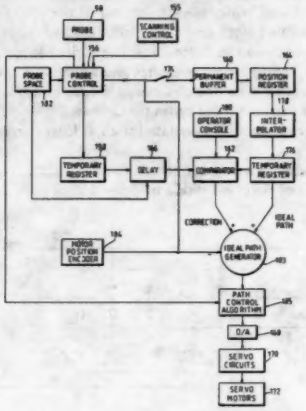
a manipulator member capable of mounting a tool whose position is controllable by said apparatus in at least two dimensions;

a path following probe mounted on said member adjacent said tool, said probe including a path sensing finger, said probe further including a transducer for converting sensed variations of said path into workpiece position signals;

an interrogator for periodically sampling said position signals, said interrogator including a comparator for determining whether said position signals correspond to variations that exceed a predetermined extent;

a first data storage medium adapted to permanently store representations of said sampled position signals that exceed said predetermined extent;

a second data storage medium adapted to temporarily store sampled position signals; and



a tool position control adapted to correct the tool position in response to said representations of said position signals temporarily stored in said second data storage medium, before said tool completely traverses said path.

4,642,753

DOMESTIC ELECTRICAL APPLIANCE

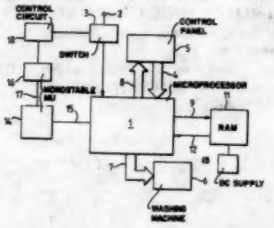
Stephen P. Easthill, Chessington, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 3, 1984, Ser. No. 637,663

Claims priority, application United Kingdom, Aug. 17, 1983, 8322170

Int. Cl.[4] G06F *15/46, 11/00*

U.S. Cl. 364—184 **4 Claims**



1. A domestic electrical appliance comprising, a solid state processor arranged to control the operation of the appliance by selecting an optionally-variable number of operating steps from N such steps in accordance with any one of a number of programs selectable by the user, a power supply, a switch for connecting the power supply to the processor, a non-volatile memory, writing means which—prior to the processing of any said operating step—writes data into the memory identifying the selected program and which—during the processing of the steps—writes data into the memory identifying the last operating step processed, reading means arranged to read the memory contents whereby, on removal and subsequent reconnection of the power supply to the processor, the memory contents read enable the processor to continue with the program if that program had not been completed at the instant of removal of the power supply, signal means for generating a clock signal only so long as the processor is functioning correctly, and

timing means which, in the absence of said clock signal for a time duration greater than the clock period, causes the switch to disconnect and then reconnect the power supply to the processor.

4,642,754

ANGLE DATA DISCRIMINATING METHOD

Hajimu Kishi; Masaki Seki, and Takashi Takegahara, all of Tokyo, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

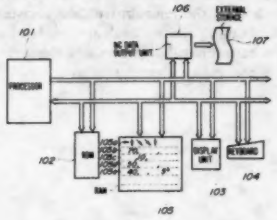
PCT No. PCT/JP84/00055, § 371 Date Jan. 7, 1985, § 102(e) Date Jan. 7, 1985, PCT Pub. No. WO84/04609, PCT Pub. Date Nov. 22, 1984

PCT Filed Feb. 20, 1984, Ser. No. 694,383

Claims priority, application Japan, May 18, 1983, 58-087266

Int. Cl.⁴ G06F *15/46*; G05B *19/18*

U.S. Cl. 364—191 **5 Claims**



1. An angle data discriminating method in a method of creating NC machining data, comprising the steps of:

(a) entering a direction for each block of a part profile through use of a profile symbol key thereby to specify said part profile;

(b) entering a dimension for each block of said part profile;

(c) using these entered data to create the NC machining data;

(d) specifying a dimension of a straight line element in a predetermined block by data including at least an angle of intersection between said straight line element and a base line; and

(e) calculating in accordance with the magnitude of said angle data and the direction of the stright line element in said block to determine whether or not said straight line element lies on a straight line obtained by rotating the base line about the point of intersection in a predetermined direction and through a predetermined angle.

4,642,755

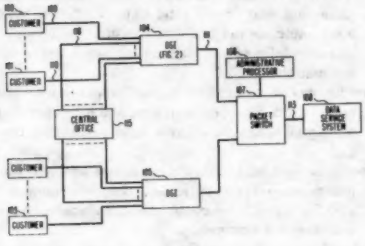
SHARED MEMORY WITH TWO DISTINCT ADDRESSING STRUCTURES

Mark G. Hinch, Wheaton, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1983, Ser. No. 481,056

Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—200 **8 Claims**



1. In a computer system having first and second processor means, an arrangement for the communication of customer multiword messages between the two processor means with said messages destined for individual customer terminals attached to said second processor means, comprising

main memory means associated with said first processor means;

global status memory means for communicating system status information from said second processor means to said first processor means;

global command memory means for communicating system related commands to said second processor means from said first processor means;

shared memory means for storing sets of customer message control information and said shared memory means comprises a first plurality of memory blocks and responsive to a set of address signals from said first processor means for accessing said memory blocks, and further comprises a second plurality of memory blocks including said first plurality of memory blocks for storing additional sets of data words and being further responsive to another set of address signals from said second processor means for accessing said second plurality of memory blocks;

first-in first-out memory means to store customer message status signals defining the type of operation to be performed transferred from said first processor means to said second processor means;

said first processor means controlling a storage of one of said messages in said main memory means;

said first processor means further controlling a storage of said customer message status signals in said first-in first-out memory means and for storing one of said sets of said customer message control information in said shared memory means and said one of said messages in said main memory means;

said second processor means responsive to said customer message status signals and said one of said sets of said customer message control information for reading said one of said messages from said main memory means;

said second processor means further responsive to the read one of said messages for communicating the latter message to one of said customer terminals by utilizing one of said sets of memory locations in said second plurality of memory blocks;

said second processor means responsive to the occurrence of a second processor system error for transmitting system status information to said first processor means via said global status memory; and

said first processor means responsive to said system status information for transmitting one of said system related commands via said global command memory to said second processor means specifying maintenance operations.

4,642,756

METHOD AND APPARATUS FOR SCHEDULING THE EXECUTION OF MULTIPLE PROCESSING TASKS IN A COMPUTER SYSTEM

Phillip H. Sherrod, Nashville, Tenn., assignor to S & H Computer Systems, Inc., Nashville, Tenn.

Filed Mar. 15, 1985, Ser. No. 712,137

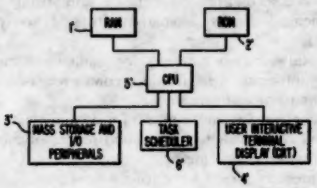
Int. Cl.⁴ G06F *9/40*

U.S. Cl. 364—200 **4 Claims**

1. In a computer system comprising a memory for storing a plurality of computer programs for processing user queries to said computer system and a CPU for executing said stored programs, a method for selecting the order in which said programs are executed by said CPU, said method comprising the steps of:

examining each of said user queries to determine which of said queries can be processed in a short period of time and

which of said queries require a longer period of time to process; and



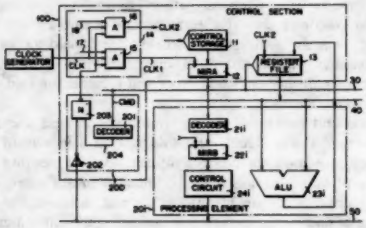
giving precedence to said user queries which can be processed in a short period of time.

4,642,757

MICROINSTRUCTION CONTROLLED ARITHMETIC CONTROL UNIT

Tsutomu Sakamoto, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 12, 1983, Ser. No. 484,260
Claims priority, application Japan, Apr. 20, 1982, 57-65821
Int. Cl.[4] G06F *9/30*
U.S. Cl. 364—200 **3 Claims**



1. a microinstruction-controlled arithmetic control unit, comprising:

a first clock generator for generating a reference clock signal for the arithmetic control unit;

a microinstruction register;

a data register;

a second clock generator, coupled to the microinstruction register and the data register, for generating a first timing clock signal for controlling the microinstruction register, and for generating a second timing clock signal for controlling the data register, the first and second timing clock signals being synchronized with the reference clock signal;

control storage means for storing microinstructions;

a microinstruction bus, coupled to the control storage means, for transferring the microinstructions;

a data bus, coupled to the data register, for transferring data,

the microinstruction register for storing the microinstruction read out from the control storage means in response to the first timing clock signal synchronized with said reference clock signal,

the data register for storing the data on the data bus in response to the second timing clock signal synchronized with the reference clock signal;

a plurality of processing elements, coupled to the microinstruction bus and the data bus, for performing an arithmetic operation specified by the microinstruction on the microinstruction bus and data on the data bus, and for producing an inhibition signal so as to inhibit the execution of the succeeding microinstruction during the execution of a microinstruction which requires a plurality of clock signals;

an inhibiting circuit, coupled to the second clock generator, for inhibiting the generation of the first and second timing clock signals when the inhibition signal is supplied thereto; and

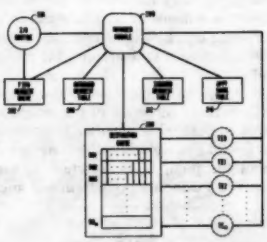
inhibition control means, coupled to the processing elements and the microinstruction bus, for controlling the application of the inhibition signal produced from the processing elements to the inhibiting circuit in response to a decoded result of the field of the microinstruction on the microinstruction bus, wherein the inhibition signal output from a first of the processing elements is inhibited by the inhibition control means to be output to the inhibiting circuit while the microinstruction requiring a plurality of clocks is executed by the first of the processing elements, the microinstruction read out from the control storage means is latched by the microinstruction register in response to the first timing clock signal, and the latched microinstruction is output to other processing elements except the first of the processing elements.

4,642,758

FILE TRANSFER SCHEDULING ARRANGEMENT

Albert Y. Teng, Bolingbrook, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1984, Ser. No. 631,176
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **25 Claims**



1. A computer including a data transfer arrangement for transferring data files to designated destinations comprising:

file transfer means for transmitting data files to said destinations;

appointment book table means containing data defiing a future time for availability of said file transfer means;

means connected to said appointment book table means for extracting said future time data from said appointment book table means and for transmitting an appointment message defining said future time to a selected one of said destinations;

timing means connected to said appointment book table means for defining current time and for generating a time-out signal when the current time equals said future time; and

means connected to said timing means and said file transfer means and responsive to said time-out signal to activate said file transfer means to transmit a specified data file to said selected destination;

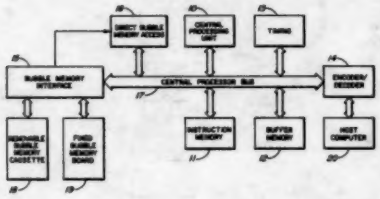
whereby said file transfer means is enabled to transmit a specified data file at the priorly defined future time.

4,642,759

BUBBLE MEMORY DISK EMULATION SYSTEM

William R. Foster, Ottawa, Canada, assignor to Targa Electronics Systems Inc., Ottawa, Canada

Filed Apr. 2, 1984, Ser. No. 595,692
Int. Cl.[4] G06F 7/06
U.S. Cl. 364—200 9 Claims



1. A magnetic bubble memory (MBM) based data storage system for emulating another data storage system, comprising:

(a) a central processor bus (CPB);

(b) a central processor unit (CPU), an instruction memory for said CPU, and a dynamic buffer memory, all connected to said CPB;

(c) MBM interface means for interfacing an MBM unit with said CPB;

(d) direct bubble memory access (DBMA) means connected to said CPB for causing said MBM interface means to transfer data from said MBM to selected parts of said dynamic buffer memory through said CPB;

(e) encoder/decoder means connected to said CPB for transmitting and receiving data to and from a host system in a manner substantially identical to that of said another data storage system, said encoder/decoder means including two direct memory access (DMA) channels, one for transmission and the other for reception of data to and from said host system for transferring data to and from selected parts of said dynamic buffer memory through said PCB; and

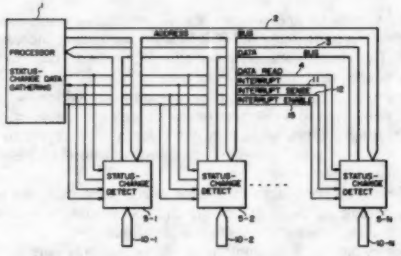
(f) said DMA channels each having registers for addressing to said dynamic buffer memory, said registers updated by said CPU through said CPB without affecting ongoing data transfers to and from said dynamic buffer memory.

4,642,760

STATUS-CHANGE DATA GATHERING APPARATUS

Takao Yanai, Hitachi, and Yoshiaki Takahashi, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,795
Claims priority, application Japan, Aug. 30, 1982, 57-149167
Int. Cl.[4] G06F 13/24; G05B 11/01
U.S. Cl. 364—200 2 Claims



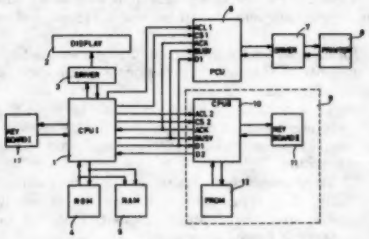
1. A status-change data gathering apparatus comprising a plurality of status-change detectors which detect and deliver data representing status changes in a process or the like, and a processor connected to said status-change detectors for gathering the delivered data of said status-change detectors in response to receipt of an interrupt signal from at least one of said status-change detectors; each status-change detector including time limit means for providing an output signal every predetermined period, status-change detection means for detecting and storing status change data and for producing an output signal when status change data is detected, and interrupt means for supplying to said processor an interrupt signal to indicate the receipt of status-change data in the status-change detector in response to receipt of output signals from both said time limit means and said status-change detection means; and predetermined period of said time limit means being shorter than a desired time resolution for the detection of status-change data; wherein said processor comprises means responsive to receipt of the interrupt signal for sending an interrupt sense signal to all of the status-change detectors, and wherein each status-change detector further includes detector identifying means for transmitting a signal identifying that detector to said processor when both the interrupt sense signal is received and the output signal of said status-change detection means is produced therein.

4,642,761

DEDICATED I/O SERIAL BIT INTERFACE WITH PERIPHERAL SELECTION

Shigenobu Yanagiuchi, Tenri, and Takuro Omori, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 526,524, Aug. 26, 1983, abandoned.
This application Jun. 2, 1986, Ser. No. 870,669
Claims priority, application Japan, Aug. 31, 1982, 57-152009
Int. Cl.[4] G06F 15/02
U.S. Cl. 364—200 2 Claims



1. A computer system comprising:

a plurality of computer peripherals;

a general purpose digital computer including,

a first keyboard developing a first key code set, and

peripheral selection means for selecting a selected peripheral from said plurality of peripherals by generating a selection signal uniquely specifying said selected peripheral and for generating a reset signal to reset said selected peripheral, and

means for developing command codes to control said selected peripheral; and

serial data transfer means, coupling said computer and each said computer peripheral, for communicating said command codes to said selected peripheral and for bidirectionally communicating data between said selected peripheral and said computer;

each said computer peripheral including acknowledgement means for sensing said selection signal, for determining whether it is said selected peripheral, and for developing an acknowledge signal communicated to said computer by said serial data transfer means;

a first peripheral of said plurality of peripherals including a second keyboard also developing said first key code set,

said computer further including keyboard selection means, responsive to said peripheral selection means, for enabling said first keyboard when said first peripheral is not selected as said selected peripheral;

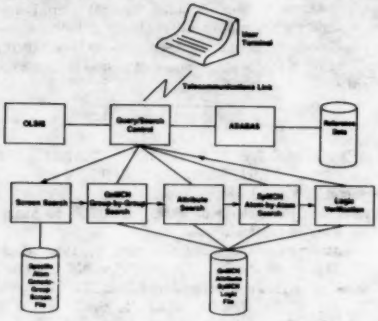
said keyboard selection means being further responsive to selection of said first peripheral as said selected peripheral by said peripheral selection means, for selectively enabling either said first keyboard or said second keyboard.

4,642,762

STORAGE AND RETRIEVAL OF GENERIC CHEMICAL STRUCTURE REPRESENTATIONS

William Fisanick, Columbus, Ohio, assignor to American Chemical Society, Washington, D.C.

Filed May 25, 1984, Ser. No. 614,219
Int. Cl.[4] G06F *15/40*
U.S. Cl. 364—300 **31 Claims**



1. A method for storing and searching Markush formulations using a programmable digital computer system and comprising:

a. forming in said digital computer system a file from a plurality of Markush formulations wherein each said Markush formulation is stored;

(1) as a specific multiple connectivity node (SpMCN) representation of all implicit individual specific structural represenations (ISSRs) of each said Markush formulation,

(2) as an associated generic multiple connectivity node (GnMCN) representation of all implicit individual generic structural representations (IGSRs) of each said Markush formulation, and

(3) with associated reference data,

b. comparing in said digital computer system each IGSR of a GnMCN representation of a query Markush formulation with each said IGSR of said file GnMCNs to give a set of file GnMCN answers in which at least one said IGSR of each said file GnMCN answer matches with at least one said IGSR of said query GnMCN, and

c. retrieving in said digital computer system said reference data associated with each said file GnMCN answer.

4,642,763

BATCH FILE PROCESSING

Edmund M. Cummins, Gwinnett County, Ga., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 23, 1985, Ser. No. 726,341
Int. Cl.[4] G06F *9/40*
U.S. Cl. 364—300 **7 Claims**

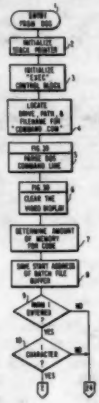
1. A batch file processing method for improving the performance of application programs run on a computer under a disk operating system comprising the steps of:

determining the amount of storage required as a variable function of a batch file to be processed and establishing a batch file buffer of appropriate size;

loading the batch file into the buffer for processing;

interrogating the batch file in the buffer one logical record at a time to find the commands contained in the batch file;

passing control to one of a plurality of internal routines to



process at least some of the commands found in the batch file without requiring disk accesses; and

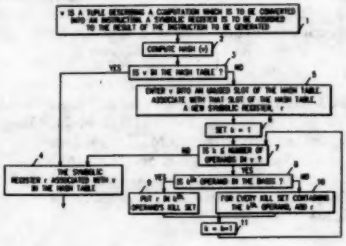
upon completion of a command, returning control for further processing of batch commands in the batch file.

4,642,764

METHOD OF DEVELOPING FORMAL IDENTITIES AND PROGRAM BASES IN AN OPTIMIZING COMPILER

Marc A. Auslander, Millwood; Martin E. Hopkins, Chappaqua, and Peter W. Markstein, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1984, Ser. No. 640,285
Int. Cl.[4] G06F *9/44*
U.S. Cl. 364—300 **6 Claims**



1. A method operable within an optimizing compiler for generating Basis items and Kill Sets for use during subsequent global common subexpression elimination and code motion procedures, said method comprising:

creating a tuple (v) for each computation which is to be converted to a machine instruction by the compiler,

creating a table having an entry for all the tuples in the program being compiled, assigning a symbolic register to each tuple created,

for every Basis item in a tuple being entered in the table adding to the Kill Set for that Basis item, a symbolic register uniquely assigned to that tuple,

for every non-basis item "n" in the tuple being entered into the table, adding the uniquely assigned symbolic register for that tuple to the Kill Sets for all the Basis items in whose Kill Sets that non-basis item "n" appears,

designating the symbolic register assigned to the tuple in the

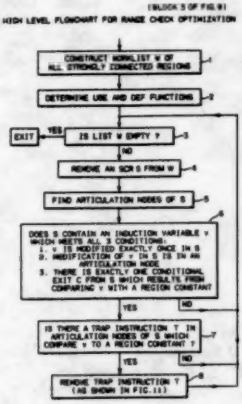
table to the result of the computation of the non-basis element, and constructing a second table of assigned symbolic registers whereby the computation to which each symbolic register has been assigned can be readily retrieved.

4,642,765

OPTIMIZATION OF RANGE CHECKING

John Cocke, Bedford; Peter W. Markstein, and Victoria I. Markstein, both of Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,395
Int. Cl.[4] G06F *9/44*
U.S. Cl. 364—300 **6 Claims**


(BLOCK 3 OF FIG. 9)
HIGH LEVEL FLOWCHART FOR RANGE CHECK OPTIMIZATION
CONSTRUCT WORKLIST W OF ALL STRONGLY CONNECTED REGIONS
DETERMINE USE AND DEF FUNCTIONS
EXIT
YES
IS LIST W EMPTY ?
NO
REMOVE AN SCR S FROM W
FIND ARTICULATION NODES OF S
DOES S CONTAIN AN INDUCTION VARIABLE v WHICH MEETS ALL 3 CONDITIONS:
1. v IS MODIFIED EXACTLY ONCE IN S
2. MODIFICATION OF v IN S IS IN AN ARTICULATION NODE
3. THERE IS EXACTLY ONE CONDITIONAL EXIT C FROM S WHICH RESULTS FROM COMPARING v WITH A REGION CONSTANT
YES
NO
IS THERE A TRAP INSTRUCTION T IN ARTICULATION NODES OF S WHICH COMPARE v TO A REGION CONSTANT ?
YES
NO
REMOVE TRAP INSTRUCTION T (AS SHOWN IN FIG. 11)

1. A method for use within the code optimization phase of an optimizing compiler operable to move certain range check instructions out of single entry strongly connected regions (SCR) or loops and into linear regions of the instruction stream whereby computational efficiency is increased with no loss of program accuracy,

said method comprising placing a range check trap instruction into the header node of the SCR provided there is only one conditional exit from the SCR based on the induction variable, and additional conditional exits none of which are based on the induction variable, modifying the conditional exit test based on the value of the induction variable (v), and inserting additional checks at the loop exit point(s) to insure that the induction variable has reached the value it would have obtained in the original (unmodified) program.

4,642,766

METHOD AND MEANS OF CONTROL FOR MULTI-SOURCE FEEDSTOCK DISTRIBUTION SYSTEM INCLUDING OPTIMIZATION OF SUPPLIES

Gary L. Funk; Robert D. Terhune; Cheryl C. Kania, and Robert H. Kallenberger, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 6, 1985, Ser. No. 709,234
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—402 **5 Claims**

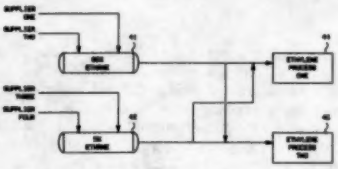
1. A method for optimizing a multi-source feedstock distribution system, wherein a first feedstock from a first supplier and a second feedstock from a second supplier are supplied to a first storage tank, wherein a third feedstock from a third supplier and a fourth feedstock from a fourth supplier are supplied to a second storage tank, wherein the composition of the feeds provided from said first, second, third and fourth suppliers are different and wherein the concentration of a first component in said first storage tank is different than the concentration of said first component in said second storage tank, wherein at least a portion of the feedstock contained in said first storage tank is supplied to a first process and a second process, and wherein at least a portion of the feedstock contained in said second storage tank is supplied to said first process and said second process, said method comprising the steps of:

establishing a first signal representative of the composition of said first feedstock, a second signal representative of the composition of said second feedstock, a third signal representative of the composition of said third feedstock and a fourth signal representative of the composition of said fourth feedstock;

establishing a fifth signal representative of the desired composition of the total feedstock provided to said first process and a sixth signal representative of the desired composition of the total feedstock provided to said second process;

establishing a seventh signal representative of the desired total flow rate of the feedstock to said first process and an eighth signal representative of the desired total flow rate of the feedstock to said second process;

establishing, in response to said first through eighth signals, a ninth signal representative of the desired flow rate of said first feedstock to said first storage tank, a tenth signal representative of the desired flow rate of said second



feedstock to said first storage tank, an eleventh signal representative of the desired flow rate of said third feedstock to said second storage tank, a twelfth signal representative of the desired flow rate of said fourth feedstock to said second storage tank, a thirteenth signal representative of the desired split of the feedstock from said first storage tank between said first process and said second process and a fourteenth signal representative of the desired split for the feedstock from said second storage tank between said first process and said second process, wherein said ninth through fourteenth signals are established based on an optimization such that the total cost of the feedstock is minimized while still meeting the compositions represented by said fifth signal and said sixth signal and the flow rates represented by said seventh signal and said eighth signal; and

manipulating the flow rate of said first feedstock in response to said ninth signal, the flow rate of said second feedstock in response to said tenth signal, the flow rate of said third feedstock in response to said eleventh signal, the flow rate of said fourth feedstock in response to said twelfth signal, the split of the feedstock from said first storage tank between said first process and said second process in response to said thirteenth signal and the split of the feedstock from said second storage tank between said first process and said second process in response to said fourteenth signal.

4,642,767

BOOKKEEPING AND ACCOUNTING SYSTEM

Moisey Lerner, 75 Rolling La., Needham, Mass. 02192

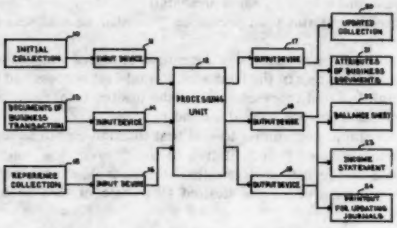
Filed Apr. 23, 1984, Ser. No. 602,941
Int. Cl.[4] G06F *15/30*
U.S. Cl. 364—406 **6 Claims**

1. A method for providing bookkeeping and accounting, the method comprising the steps of

(a) entering into a processing unit a collection of coded numerical data of monetary totals of business accounts, said collection being called starting collection and reflecting financial condition of a business as of a particular day, called starting day, all the data of said collection being balanced so that the total of all asset accounts are equal to the total of all equity accounts;

(b) entering into said processing unit a monetary amount and a code of each document of new business transactions (checks, invoices, etc.) which have not been already reflected in said starting collection of coded numerical data;

(c) adding said monetary amount to the totals of at least two business accounts, the codes of said accounts corresponding to the code of the entered document so that the total



of all asset accounts remain equal to the total of all equity accounts, whereby a new collection of coded numerical data is being created, said collection called updated collection and describing financial condition of a business on the day when the documents of financial transactions have been entered, said day being called ending day;

(d) combining and arranging the data of said updated collection to provide a statement of financial condition on the ending day;

(e) printing out said statement of financial condition with the help of an output device;

(f) saving said updated collection of coded numerical data on magnetic tape and also on other available information storage means with the help of an output device for permanent storage.

4,642,768

METHODS AND APPARATUS FOR FUNDING FUTURE LIABILITY OF UNCERTAIN COST

Peter A. Roberts, 325 E. 72nd St., Apt. 6A, New York, N.Y. 10021

Filed Mar. 8, 1984, Ser. No. 587,568
Int. Cl.[4] G06F *15/21*
U.S. Cl. 364—408 **4 Claims**

1. A data processing system for administering an insurance program to insure against the uncertainty of the cost of a service or commodity at a future date, which determines the premium charges required and manages the portfolio of investments purchased with invested premiums comprising:

means for determining the policy premium charge based on the present cost of the service or commodity, data concerning the time rate of change of said present cost, and the time period to maturity of the policy;

means for determining the redemption value of a policy based on the current premium charge for a policy having the same yield and maturity date;

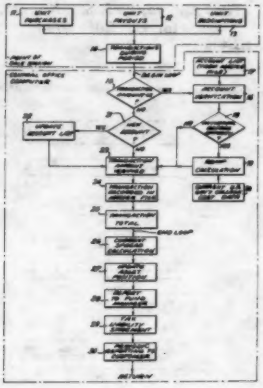
means for entering policy purchase and redemption transaction data into the data processing system;

account list means for storing an account list including current information for each policy account;

asset position list means for storing an asset position list including current information concerning the portfolio of investments purchased with the policy premiums;

means for periodically processing said policy purchase and redemption transaction data to update the account list, and to determine the net amount represented by said transaction data for a period for which said periodic processing is performed;

means responsive to said transaction data and to information from said asset position list for providing portfolio management data so that securities can be selectively purchased or sold to provide that the cash flow from the portfolio is adequate for funding policy payouts and redemptions and to provide that the rate of yield of the



portfolio at least matches the rate of change of the present cost of the service or commodity;

means for entering the selected security purchase and sale transaction data, to update the asset position list;

means for generating a management report including said portfolio management data and said information in said updated asset position list; and

means for generating a customer report including current information for each policy account.

4,642,769

METHOD AND APPARATUS FOR PROVIDING STIMULATED EXERCISE OF PARALYZED LIMBS

Jerrold S. Petrofsky, Beavercreek, Ohio, assignor to Wright State University, Dayton, Ohio

Continuation-in-part of Ser. No. 503,103, Jun. 10, 1983, abandoned. This application Apr. 11, 1985, Ser. No. 722,249
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—415 **12 Claims**

1. Method of exercising a limb of a specific human individual comprising the steps of:

storing in a portable electronically readable memory control instructions for a specifically prescribed exercise routine and a plurality of physiological parameters corresponding to specifically prescribed limits on the physiological response of said human individual to said exercise routine,

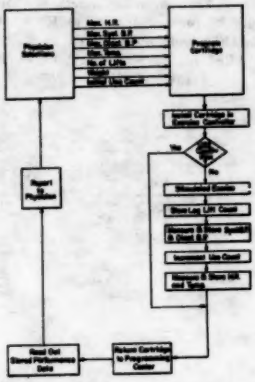
placing said memory into communication with an exercise control device,

causing said exercise control device to read said exercise control instructions from said memory and generate a series of stimulation signals in response thereto,

producing coordinated repetitive movement of said limb by applying said stimulation signals to muscles connected for production of said movement,

measuring the physiological response of said human individual to said movement,

causing said exercise control device to read said physiological parameters from said memory, and



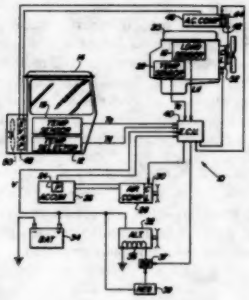
terminating the generation of said stimulation signals when said physiological response exceeds any of said prescribed limits.

4,642,770

VEHICLE ACCESSORY CONTROL SYSTEM

Ralph E. Shirley, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 18, 1985, Ser. No. 724,427
Int. Cl.[4] G05D 23/00; B60H 1/32
U.S. Cl. 364—424 17 Claims



16. A method for controlling the operation of a vehicle air conditioning compressor driven by an engine via engageable and disengageable clutch, the method comprising:

(a) periodically sensing loading of the engine and generating a plurality of engine load values, each representing the engine loading at a particular instant;

(b) storing a set of said load values in a corresponding first set of memory locations;

(c) deriving an engine loading factor from the set of stored load values;

(d) storing a set of engagement values in a corresponding set of memory locations, each engagement value representing an engagement status of the clutch at a certain instant;

(e) deriving an engagement history factor from the set of stored engagement values;

(f) comparing the engine loading factor with the engagement history factor; and

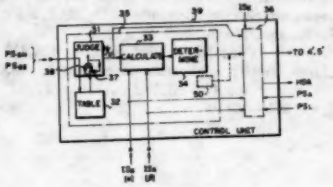
(g) controlling engagement of the clutch, depending upon the relationship between the compared factors.

4,642,771

DIAGNOSTIC PROCESSING SYSTEM FOR AUTOMATIC TRANSMISSION OF AN AUTOMOBILE

Yasuyoshi Asagi, Kawasaki; Noriaki Ogawa, Tokyo; Hitoshi Kasai, Kawasaki; Toshihiro Hattori, Ayase, and Makoto Urushara, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1984, Ser. No. 625,681
Claims priority, application Japan, Jun. 30, 1983, 58-119161
Int. Cl.[4] B60K 41/04
U.S. Cl. 364—424.1 18 Claims



1. A diagnostic processing system for an automatic transmission of an automobile having an engine speed and an automobile speed, the automatic transmission having gears and a clutch, said diagnostic processing system comprising:

gear position sensing means for generating gear position signals; and

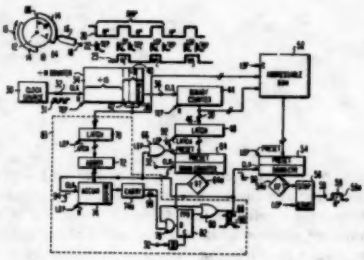
analyzation means for determining the gear position in dependence upon the engine speed, the automobile speed and the gear position signals when the gear position signals do not indicate a unique gear position.

4,642,772

SYSTEM FOR DETERMINING TIME DURATION OF ANGULAR ROTATION

Paul N. Dackow, Hillsborough Township, Somerset County, N.J., assignor to RCA Corporation, Princeton, N.J.

Division of Ser. No. 495,117, May 16, 1983, Pat. No. 4,575,865.
This application Oct. 31, 1985, Ser. No. 793,311
Int. Cl.[4] F02P 5/04
U.S. Cl. 364—431.04 4 Claims



1. A system for determining time to produce an ignition spark in an internal combustion spark-fired engine having a rotating part comprising in combination:

means producing signals marking the beginning and the end of a fixed number M of degrees of rotation of said engine part;

means producing clock pulses at a fixed rate;

means responsive to said clock pulses and to said beginning and end signals for generating a number related to the number of clock pulses produced during a value X in degrees of engine part rotation, where X is unequal to M;

means responsive to said generated number for producing a

value related to the number of degrees N of engine part rotation after said end, at which it is desired to produce said ignition spark, and

means responsive to said generated number, to said clock pulses and to said value for determining when said engine part has rotated N degrees past said end.

4,642,773

METHOD AND APPARATUS FOR CONTROLLING AN ENGINE

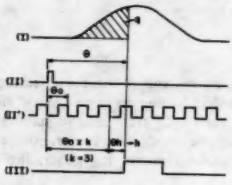
Masahiko Miyaki, Oobu, and Tsuneyuki Egami, Aichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

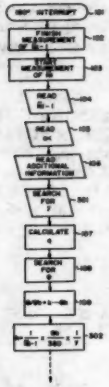
Filed Jul. 6, 1984, Ser. No. 628,370

Claims priority, application Japan, Jul. 8, 1983, 58-125154

Int. Cl.[4] F02D *5/02;* **G05B** *15/02*

U.S. Cl. 364—431.05 **7 Claims**





1. A method of controlling an engine with a control signal produced at a angle phase of rotation of the engine and determined by a reference angle signal produced at a reference angle of rotation of the engine, and a rotational angle signal produced for each crank angle, comprising the steps of:

(a) counting rotational angle signals produced after each reference angle signal before said angle phase is reached with any remainder angle smaller than said crank angle;

(b) converting said remainder angle into a time based on an average number of r.p.m. of the engine at the time the conversion is effected;

(c) issuing said control signal upon elapse of said counted rotational angle signals and said converted time;

(d) determining a ratio of an instantaneous number of r.p.m. of the engine in the vicinity of said angle phase to an average number of r.p.m. of the engine; and

(e) correcting the time converted from said remainder angle with said ratio.

4,642,774

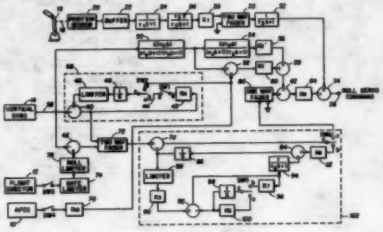
AUTOMATIC FLIGHT CONTROL WITH PILOT FLY-THROUGH

John P. Centala, Marion, and Kenneth W. McElreath, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 1, 1982, Ser. No. 394,360

Int. Cl.[4] B64C *13/18*

U.S. Cl. 364—434 **9 Claims**



8. An aircraft attitude control system comprising:

means for receiving a signal representing a preset aircraft attitude;

means for receiving a signal representing actual aircraft attitude;

means for combining said signals to provide an error signal as a control output during a first control mode for automatically controlling said aircraft attitude so that said actual aircraft attitude is equal to said preset aircraft attitude;

means for removing said error signal as said control output during a second control mode and manually substituting a signal as said control output for changing aircraft attitude during said second control mode; and

means responsive to said error signal for developing a profile signal during said second control mode and modifying said error signal with said profile signal upon return to said first control mode such that said modified error signal returns said aircraft attitude from a changed attitude to said preset attitude in accordance with a predetermined profile, said means for developing and modifying comprising dual signal integration loops which are coupled to integrate said error signal during said second control mode to produce an integrated signal and to subtract said integrated signal from said error signal to produce said modified error signal upon return to said first control mode and provide said modified error signal as said control output for returning said aircraft to said preset attitude.

4,642,775

AIRBORNE FLIGHT PLANNING AND INFORMATION SYSTEM

J. Douglas Cline, Mission Viejo, Calif.; James A. Wilson, Prescott, Ariz.; Stanley H. Feher, Corona, Calif., and George D. Ward, Prescott, Ariz., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 613,987, May 25, 1984, abandoned. This application May 24, 1985, Ser. No. 737,665

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—443 **40 Claims**

1. A flight planning system for use with an aircraft having a computerized navigation system comprising:

a data center at a first site that is remotely located from said aircraft includes a database storing navigation route information, performance characteristics for the aircraft and weather data, along with processing means responsive to flight plan input information for generating flight plans from said database, said processor of said data center being accessible by means of a data communications link

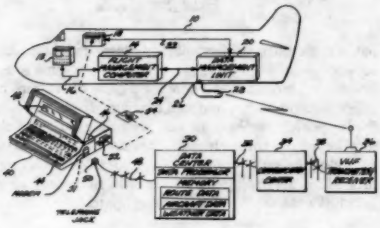
for transmitting said flight plan input information to said data center from a second site remote from both said aircraft and said data center and for transmitting said flight plans to said second remote site;

a portable computer for use at a location remote from said aircraft, said portable computer having a processor, a memory, data input means for pemitting an operator to input flight planning data, display means for displaying data to an operator and data recording means for recording one or more flight plans on a storage medium;

data communications means for selectively establishing a data communication link between said portable computer and said data center;

a data transfer unit secured within the aircraft including means for receiving and reading said storage medium and reading said one or more flight plans recorded on said storage medium; and

a data management unit connected to said data transfer unit and the computerized navigation system; said data management unit including means for transferring said one or more flight plans from said data transfer unit to said computerized navigation system.



23. A flight planning system for use with an aircraft having a computerized navigation system comprising:

a data center located on the ground that includes a database storage navigation route information, performance characteristics for the aircraft and weather data, along with processing means for generating flight plans from said database;

a ground base radio communication system connected to said data center; and

a data management unit secured within the aircraft and operatively connected to the computerized navigation system, said data management unit including a radio transmission unit for communicating with said data center via said ground based radio communication system, said data management unit including processor means operatively connected to said radio transmission unit for transmitting requests for flight plan updates to said data center via said ground based radio communication system and for receiving flight plan transmitted to said aircraft via said ground based communication system.

4,642,776

AUTOMOBILE ROUTE INFORMATION DISPLAY

Muneaki Matsumoto, Okazaki, and Koji Numata, Toyokawa, both of Japan, assignors to Nippon Soken, Inc., Aichi, Japan

Filed Jul. 3, 1984, Ser. No. 627,622

Claims priority, application Japan, Jul. 12, 1983, 58-125532

Int. Cl.⁴ G06F *15/50*

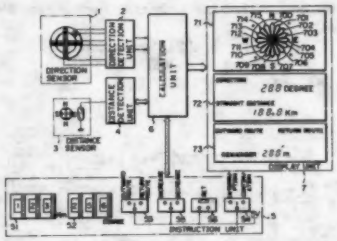
U.S. Cl. 364—449 **4 Claims**

1. A device for displaying information concerning a travel route of an automotive vehicle comprising:

direction detection means for generating a direction signal corresponding to a vehicle travel direction;

distance detection means for generating a distance signal corresponding to a distance travelled by the vehicle;

control means for: (1) continuously monitoring changes in the travel direction of the vehicle on the basis of the direction signal detected by said direction detection means with reference to a reference compass bearing, (2) successively storing: (a) direction change indication signals corresponding to an amount of change in the direction of travel of the vehicle with reference to said reference compass bearing when an amount of change in the travel direction of the vehicle exceeds a predetermined amount, and (b) distance signals, each of which corresponds to a distance from a distance reference, at a time of storing one of said direction change indication signals on the route from the starting point to the destination, and (3) generating a travel direction signal indicative of a travel direction



substantially at every predetermined distance interval on the route from the destination to the starting point on the basis of said stored direction change indication signals and said stored distance signals,

displaying means for displaying the travel direction on the route from the destination to the starting point on the basis of said travel direction signal delivered from said control means; and

instruction means for supplying said control means with a mode signal for determining a mode of control thereof corresponding to one of the outward travel state and the return travel state.

4,642,777

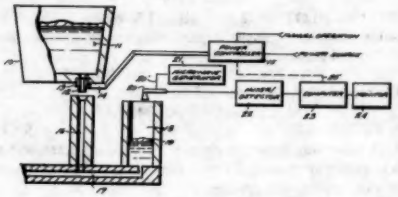
METHOD AND APPARATUS FOR MICROWAVE DETERMINATION OF LIQUID RATE-OF-RISE USING DOPPLER DETECTION

Lavern H. Schwanke, Stromsville, Ohio, assignor to Foseco International Limited, Birmingham, England

Filed Apr. 12, 1984, Ser. No. 643,258

Int. Cl.⁴ G06G *7/57*; G01S *13/26, 13/08*; G01R *27/04*

U.S. Cl. 364—476 **46 Claims**



1. A method of determining the rate-of-rise of a liquid comprising the steps of:

(a) transmitting a microwave signal of controlled wave length toward the surface of the liquid;

(b) detecting a mixed microwave amplitude signal comprised of a signal reflected from the surface and said transmitted microwave signal, and producing an analog output signal responsive to the detected mixed signal;

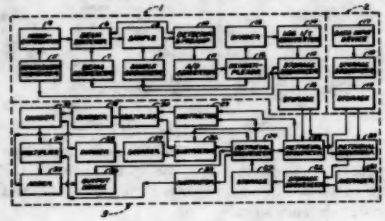
(c) converting the analog output signal to a digital signal;
(d) filtering the digital signal;
(e) determining the level of noise in the filtered signal;
(f) continuously analyzing, with a digital signal processor, the digital signal in response to the determined noise level to determine Doppler frequency; and
(g) calculating the rate of rise of the surface of the liquid in response to said determined Doppler frequency.

4,642,778

METHOD AND DEVICE FOR SPECTRAL RECONSTRUCTION

Gary M. Hieftje, and David H. Honigs, both of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Mar. 2, 1984, Ser. No. 585,575
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—498 **19 Claims**



7. A device for spectral reconstruction:
(a) means for obtaining the concentrations of a first component in a series of mixtures of components, the concentrations of the first component constituting a set of reference values;
(b) spectrometer means for obtaining spectral values for each mixture in the series of mixtures;
(c) data storage means for storing the reference values and spectral values;
(d) data input means for supplying the reference values and spectral values to the data storage means;
(e) spectral reconstructor means for cross-correlating the corresponding reference values and spectral values stored in the data storage means, thereby providing a spectral contribution for the one component;
(f) data output means for outputting the spectral contribution for the one component.

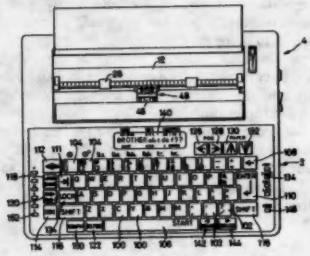
4,642,779

WRITING-PLOTTING APPARATUS WITH KEYBOARD

Akihiro Sawada, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 4, 1985, Ser. No. 707,675
Claims priority, application Japan, Mar. 12, 1984, 59-47970
Int. Cl.[4] G01D *9/30*; B41J *3/04*
U.S. Cl. 364—520 **9 Claims**

1. A recording appartus capable of writing characters such as letters and symbols in a writing mode, and plotting graphs in a plotting mode, comprising:
a keyboard having character keys corresponding to said characters, and function keys;
a paper support member for supporting a sheet of paper;
a paper feeding device for feeding said sheet of paper in one of opposite directions;
a carriage supporting a writing instrument, and movable in a direction perpendicular to a line of feed of said sheet of paper;
a carriage driving device for reciprocating said carriage in said direction;
a character pattern memory for storing sets of character pattern data representative of patterns of said characters;
a graphic pattern memory for storing at least one set of graphic pattern data representative of a graphic pattern;
control means which, in said writing mode, reads out from said character pattern memory the sets of character pattern data corresponding to the character keys operated, and in said plotting mode, reads out from said graphic



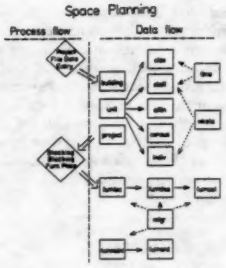
pattern memory said graphic pattern data, said control means being responsive to the read-out character and graphic pattern data and controlling the operations of said paper feeding device and said carriage driving device; and
a display which displays, in said writing mode, the characters keyed in through said character keys, and which provides, in said plotting mode, messages relating to a procedure according to which data necessary to plot a graph is entered through said keyboard.

4,642,780

SPACE PLANNING/FACILITIES MANAGEMENT SYSTEM USING PRIORITY AND AFFINITY COLORS

Robert Thomson, Northboro, Mass., assignor to Sigma Design, Inc., Englewood, Colo.

Filed Nov. 2, 1984, Ser. No. 667,644
Int. Cl.[4] G06F *7/00*
U.S. Cl. 364—512 **3 Claims**



1. A computer implemented method comprising the steps of: forming and displaying on a color screen an affinity matrix, and operating in a priority color mode to cause the screen to show (i) a column of rows each identifying a respective department to which a portion of a multi-story building is to be allocated and the space requirements and relative priority of the department, wherein the priority is indicated by a block of a priority color, and the priority colors range from warmer for higher priority to cooler for lower priority, and (ii) a rectangular matrix of affinity elements, wherein each element indicates the affinity between two respective departments, and the affinity level of each element is indicated by a block of an affinity color which

is at the matrix position of the element and wherein the affinity colors range from green for high affinity to paler greens for lower affinity, white for neutral affinity and red for negative affinity;

selecting a department and selectively operating in an affinity color mode to cause the column block for that department to change to blue and the column blocks for the other departments to change to the respective affinity colors of the other departments relative to the selected department, to thereby facilitate determining at a glance the respective degrees of affinity of the other departments to the selected department, and selectively switching between the priority and affinity color display modes for the affinity matrix display and selectively assigning and reassigning priority and affinity colors to selected departments;

forming and displaying a stacking diagram on the screen, said stacking diagram showing a stack of floors in the form of blocks related in size to the available floor areas and a column of rows each identifying a respective department, its relative priority and its space requirements, and selectively operating in a priority color mode to cause the stacking diagram to show, at the respective floor block of a selected floor, an allocation block sized in relation to the space requirements of a selected department and colored in the respective priority color of the department, and an affinity color mode to cause the allocation block for that department to be colored blue and any other allocation blocks of other departments to be shown in their respective affinity colors relative to the department with the blue allocation color, to thereby facilitate the determination at a glance of the affinities between and the relative sizes of departments allocated to the stack of floors, and switching between the priority and affinity color modes for the stacking diagram and selectively creating and moving allocation blocks; and

forming and displaying on the screen a blocking diagram showing a selected floor as a block sized and shaped in accordance with the floor area thereof and a column of rows each identifying a respective department, its relative priority and its space requirements, and selectively operating in a priority color mode to cause the blocking diagram to show, at the floor block, a department allocation block sized in relation to the space requirements of a selected department and colored in the respective priority color of the department, and in an affinity color mode to cause the allocation block for that department to be colored blue and any other allocation blocks of other departments to be shown in their respective affinity colors relative to the department with the blue allocation color, to thereby facilitate the determination at a glance of the affinities between and relative sizes of departments allocated to the floor block.

4,642,781

SYSTEM FOR AUTOMATICALLY CALIBRATING A ROBOT

Laszlo Szonyi, Gamlor, Sweden, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1984, Ser. No. 628,922

Claims priority, application Sweden, Jul. 22, 1983, SW9-83-005

Int. Cl.[4] G06F *15/46*; G05B *19/42*

U.S. Cl. 364—513 **11 Claims**

1. A system for automatically compensating for positioning errors of a robot gripper in all degrees of freedom in a robot or like system,

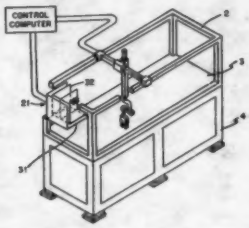
characterized by the steps of

grasping a measuring device at a predetermined reference point with the robot gripper so that a predetermined gripper reference point aligns with said predetermined measuring device reference point;

moving said measuring device held by the robot gripper in response to a command representative of a predetermined nominal position within a measuring fixture known to the robot controller;

determining, by actual measurement by means of a plurality of pair of sensors the difference between sensor values of a first pair of sensors and using this difference between sensor values of a first pair of sensors for moving the robot gripper in order to compensate for an error in an associated first angular coordinate direction; thereby reducing the difference between sensor values of the first pair of sensors until the sensor values are equal;

successively repeating the determining step using each difference between sensor values of successive pairs of sensors in order to compensate for errors in respective associ-



ated angular coordinate directions, thereby reducing the difference between sensor values of successive pairs of sensors until the respective sensor values are equal

comparing the equal sensor values of said first pair of sensors with a first nominal value representative of said predetermined nominal position of the measuring device,

using the difference value obtained by said comparing step for moving the robot gripper in order to compensate for an error in an associated first orthogonal coordinate direction,

successively repeating said comparing and said using steps using each equal sensor values of successive pairs of sensors in order to compensate for errors in respective associated orthogonal coordinate directions.

4,642,782

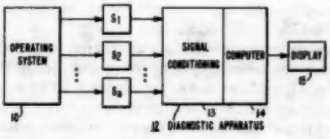
RULE BASED DIAGNOSTIC SYSTEM WITH DYNAMIC ALTERATION CAPABILITY

Christian T. Kemper, Winter Park, Fla.; Simon Lowenfeld, Monroeville, and Mark S. Fox, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1984, Ser. No. 636,196

Int. Cl.[4] G06F *15/46, 11/30*

U.S. Cl. 364—550 **11 Claims**



1. A method of diagnosing an operating system to malfunctions comprising the steps of:

(A) storing a rule base pertinent to the particular operating system being diagnosed and being operable to reach one or more conclusions relative to the condition of said system and being comprised of a plurality of schema, each said schema being defined by a data structure having a plurality of slots in which particular attributes of the schema are stored; and

(B) changing the contents of any predetermined slot of any

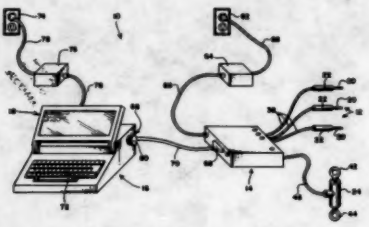
predetermined other schema upon the occurrence of a predetermined event.

4,642,783

LIFE RAFT TESTING DEVICE

William B. Alexander, New Orleans, La., and Paul Frenger, Houston, Tex., assignors to Safe-Test, Inc., New Orleans, La.

Filed Jun. 11, 1984, Ser. No. 619,601
Int. Cl.[4] G06F 15/20; G01N 7/00
U.S. Cl. 364—551 7 Claims



1. A testing device for evaluating the physical parameters of a life raft comprising:

transducer means for converting the physical inputs from said life raft to electrical impulses, said transducer means comprising:

a pressure transducer for evaluating the pressure of a gas within said life raft, said pressure transducer having a chamber connected thereto;

a temperature transducer having a nozzle for connection to a valve of said life raft, said temperature transducer positioned adjacent said nozzle; and

a load cell transducer for weight measurement of said life raft;

connection means fastened to said transducer means for enabling said transducer means to be interactive with said physical input from said life raft, said connection means comprising:

a pressure transducer nozzle for connection to a valve for said life raft, said chamber of said pressure transducer being adjacent to and in air-tight connection with said pressure transducer nozzle, said chamber for allowing differential pressures within said chamber and said life raft to equalize upon connection of said pressure transducer nozzle to a valve of said life raft; and

a load cell hook physically connected to said load cell transducer for receiving the weight to be measured of said life raft, said load cell hook being interactive with said load cell transducer;

processing means electrically connected to said transducer means for selectively converting said electrical impulses of said transducer means into signals relative to said physical inputs each of said pressure transducer, said temperature transducer, and said load cell transducer having electrically conductive lines extending therefrom to said processing means, the signals from said transducer means being passed as separate inputs to said processing means; said processing means evaluating said life raft based on said signals;

control means electrically connected to and interactive with said processing means for selectively manipulating said signals from said processing means; and

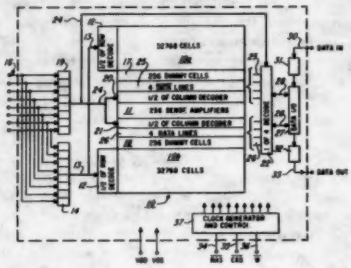
output means electrically connected to said control means for producing a perceivable display of said signals from said processing means.

4,642,784

INTEGRATED CIRCUIT MANUFACTURE

Lionel S. White, Jr., and Maury Zivitz, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 26, 1984, Ser. No. 604,115
Int. Cl.[4] G06F 11/00
U.S. Cl. 364—551 24 Claims



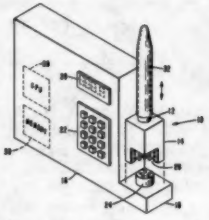
1. In the method of manufacturing integrated circuits that may sporadically contain manufacturing defects not detectable visually or requiring excessively long visual inspection to detect, the improvement comprising the steps of: applying an electrical test sequence to a large number of said integrated circuits to generate a proven data base containing the responses caused by specific manufacturing defects to said electrical test sequence, said sequence including a plurality of tests of electrical characteristics of said integrated circuits, said responses being multiple-bit digital indicators of results of said tests, applying said electrical test sequence to a second group of manufactured integrated circuits to obtain a second response corresponding to said responses and when said second response is obtained indicating a defect in an integrated circuit of said second group, comparing said second response to said proven data base to specifically identify the defect.

4,642,785

CORDLESS ELECTRONIC THERMOMETER

Roger E. Packard, Huntington Beach, Calif., and Jacob E. Thomas, Ithaca, N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 10, 1985, Ser. No. 721,724
Int. Cl.[4] G01K 7/24, 7/10
U.S. Cl. 364—557 7 Claims



1. An electronic thermometer comprising:

temperature sensing means for sensing a temperature and providing over time, a series of temperature related electric parameters, said temperature sensing means comprising a bridge circuit including a thermistor, and an analog-to-digital converter for converting the voltage across said bridge circuit to a digital representation;

data storing means connected to said temperature sensing means for storing said series of temperature related elec-

tric parameters, said data storing means including a microprocessor connected to said analog-to-digital converter of said temperature sensing means, and a random access memory device connected to said microprocessor, wherein said microprocessor receives periodic digital representations of the voltage across said bridge circuit and stores them in said random access memory device;

data transmitting means having an output and connected to said data storing means for transmitting said series of temperature related electric parameters upon command, said data transmitting means including a universal asynchronous receiver transmitter (UART) connected to said microprocessor, wherein said UART receives the digital representations of the voltages across said bridge circuit in parallel fashion, and transmits them in serial fashion on the output of said data transmitting means;

connector means connected to the output of said data transmitting means, said connector means having a command input which, when connected to a power source, receives an electrical command for commanding said data transmitting means to transmit data, and further having a data output for providing thereon the data transmitted from said data transmitting means; and

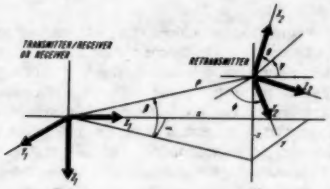
electrical energy storage means electrically connected to said connector means which, when said connector means is connected to the power source, receives and stores electrical energy, and which, when said connector means is not connected to the power source, supplies the stored electrical energy to said temperature sensing element and said data storing means.

4,642,786

METHOD AND APPARATUS FOR POSITION AND ORIENTATION MEASUREMENT USING A MAGNETIC FIELD AND RETRANSMISSION

Per K. Hansen, Burlington, Vt., assignor to Position Orientation Systems, Ltd., South Burlington, Vt.

Filed May 25, 1984, Ser. No. 614,250
Int. Cl.[4] G01B *7/14*; G01S *5/14*; G06F *15/32*
U.S. Cl. 364—559 **25 Claims**



1. A magnetic position and orientation measurement system comprising:

(a) an object, the position and orientation of which are to be measured;

(b) retransmitter means attached to said object in predetermined position and orientation with respect thereto; and

(c) electrical circuitry means including:

(i) transmitter means for transmitting a magnetic field at a resonant frequency of said retransmitter means;

(ii) receiver means for receiving a magnetic field retransmitted by said retransmitter means; said receiver means converting said magnetic field into a proportional voltage; and

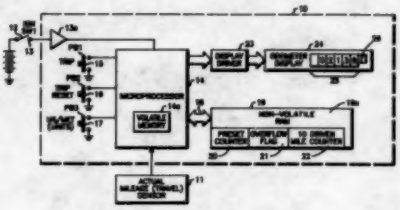
(iii) calculating means for receiving voltages from said receiver means related to said magnetic field and, therefrom, calculating the position (x, y, z) and orientation (ψ, θ, ϕ) in six degrees of freedom of said retransmitter means and said object.

4,642,787

FIELD PRESETTABLE ELECTRONIC ODOMETER

Timothy D. McCarthy, Palatine, Ill.; Scott T. Christians, and A. Dale Olmstead, both of Buda, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1984, Ser. No. 635,960
Int. Cl.[4] G01C *22/00*; G06F *15/36*
U.S. Cl. 364—561 **26 Claims**



1. A field presettable electronic usemeter, for an apparatus, comprising:

usemeter means for developing a use count signal having a magnitude representative of total accumulated use of an apparatus in response to an input sensor signal provided in accordance with actual use of said apparatus and in response to a stored use count signal;

display means operatively connected to said usemeter means for providing a visual display representative of the magnitude of said use count signal;

non-volatile memory means operatively connected to said usemeter means for storing, at selected times, said use count signal in a non-volatile memory and thereby providing said stored use count signal; wherein the improvement comprises,

preset means operatively connected to said non-volatile memory means for implementing a preset mode while said non-volatile memory means is operatively connected to said usemeter means, in response to the occurrence of predetermined conditions, for adjusting the magnitude of the use count signal stored in said non-volatile memory means in accordance with received control signals unrelated to actual use of said apparatus such that the magnitude of said stored use count signal is unrelated to the total accumulated use of said apparatus as determined by said usemeter means prior to said implementation of said preset mode.

4,642,788

COMBINATORIAL WEIGHING METHOD AND APPARATUS

Setsuo Haze, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Apr. 27, 1984, Ser. No. 605,377
Claims priority, application Japan, Apr. 27, 1983, 58-074830
Int. Cl.[4] G01G *19/22, 19/00*
U.S. Cl. 364—567 **20 Claims**

16. A combinatorial measuring method comprising the steps of:

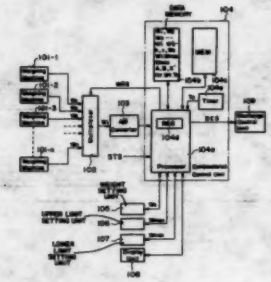
(a) determining, during a weighing cycle, the weights of a plurality of batches of articles, and providing weight values corresponding to the respective weights of the batches of articles;

(b) performing, during a weighing cycle, combinatorial computation based on the weight values provided in said step (a) to select the combination of batches having a total combined weight value which is closest to a target weight value within preset allowable limits;

(c) selectively calculating a means weight value for the total combined weight values corresponding to the combina-

tions selected in said step (b) during a plurality of weighing cycles;

(d) adjusting the target weight value so that the mean weight value approaches a preset weight value which is within the preset allowable limits, said adjusting step comprising the substeps of:



(i) diminishing the target weight value by a predetermined amount when the mean weight value is greater than the preset weight value; and

(ii) increasing the target weight value by the predetermined amount when the mean weight value is less than the preset weight value.

4,642,789

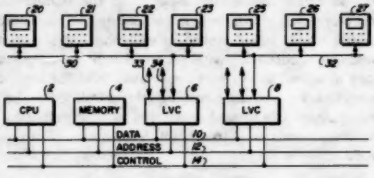
VIDEO MEMORY CONTROLLER

Michael G. Lavelle, San Jose, Calif., assignor to Motorola Computer Systems, Inc., Cupertino, Calif.

Filed Sep. 27, 1983, Ser. No. 536,911

Int. Cl.[4] G06F *3/153*; G09G *3/02*

U.S. Cl. 364—900 **8 Claims**



1. A data processing system comprising:

a central processor;

a terminal communicating with said central processor, said terminal comprising:

a terminal processor,

a terminal memory for storing data, instructions, and the results of processing operations performed at said terminal,

a display, said display being segmented into at least two independent display segments, and said display having a trace time during which information is written to said display, and a retrace time during which information is not written to said display,

a display memory for storing information to be displayed by said display,

buffer means coupled between said terminal memory and said display memory, and

a video controller coupled to said terminal processor and to said buffer means for controlling the transfer of information from said display memory through said buffer means back to said display memory during said retrace time, said video controller, in response to a single instruction from said terminal processor, controlling the transfer of a plurality of display character words, and said video controller writing substantially all of said information back to said display memory, but overwriting a predetermined portion of said information with a predetermined character in accordance with data stored in said terminal memory, to thereby perform a fill operation of a portion of a line of information being displayed by one of said display segments.

4,642,790

PRESENTATION SPACE MANAGEMENT AND VIEWPORTING ON A MULTIFUNCTION VIRTUAL TERMINAL

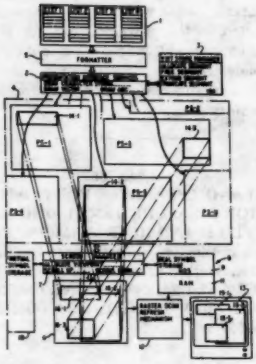
John F. Minshull, Winchester, England, and Martin C. Pinnell, Dalkeith, Australia, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1984, Ser. No. 589,381

Claims priority, application European Pat. Off., Mar. 31, 1983, 83301868.2

Int. Cl.[4] G06F *3/00*

U.S. Cl. 364—900 **14 Claims**



1. A method to be practiced in an interactive display system for displaying on a raster-scanned or matrix address display device of a terminal, selected windows of data supplied to or generated by the system in the course of performance of one or more applications invoked by the user of the terminal, said data being supplied or generated in the form of coded information (text, image, or vector orders) and said system comprising formatting means for expanding selected parts of the coded information into full non-coded image representation of the data, means for storing bit image representation of said selected windows of data in a refresh buffer, and means for sampling the contents of said refresh buffer in synchronism with the scan of said display device in order to display the selected data portions mapped in said refresh buffer in corresponding viewports on the display device,

said method being characterized in that said terminal is provided with storage space for on-demand storage and retrieval of bit image representations of all the data formatted by the application or applications invoked by the user whether or not such bit image representations are or will be displayed, presentation interface means is provided and rendered operable in response to such user invocation of an application to allocate presentation space within said storage and to store all formatted data associated with said application therein, and screen manager means is provided and rendered responsive to user input to identify and map the contents of those presentation spaces containing the

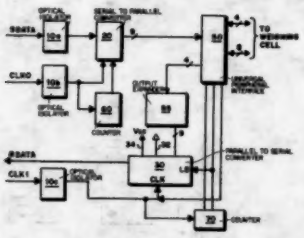
image representation of said selected windows of data into said refresh buffer.

4,642,791

INTERFACE FOR MAILING SYSTEM PERIPHERAL DEVICES

Joseph Mallozzi, Shelton; David E. Dinan, and Edward P. Daniels, both of Bridgeport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 15, 1983, Ser. No. 532,251
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—900 **5 Claims**



1. An interface between a weighing cell providing weight information in the form of coded digits representative of arbitrary weight units and an OCIA type port for a data processing system, comprising:

(a) data input means connected to a serial data input line and to an associated input clock line, both from said OCIA type port, for receiving serial data input words shifted individually into said input means from said serial data input line by series of clock pulses of a predetermined length on said input clock line and for converting said serial data input words to parallel input words individually;

(b) data output means connected to a serial data output line and to an associated output clock line, both to said OCIA port, for receiving parallel data output words individually and for shifting said data output words individually out on said output line in a serial format by means of series of clock pulses of a predetermined length received on said output clock line, said output means further comprising:

(1) a parallel loaded shift register, said shift register having a first stage, a second stage and a further plurality of stages, said stages each having an input and an output, said first stage's input being hard-wired to a predetermined logic level indicative of an inactive state of said output means, said second stage's input being hard-wired to the opposite logic level to said predetermined level indicative of a data available state of said output means, and the inputs of said plurality of stages receiving said individual parallel data output words, and said shift register having said first stage output connected to said data output line and a clock input connected to said output clock line and to an interface control means for receiving clock signals to shift data in said shift register, whereby when said individual parallel data output word is loaded into said shift register and shifted once said indicative opposite logic level is placed on said output line to signal said port on said output line that data is available, said port responding to said indicative opposite logic level by providing series of clock pulses to shift out the contents of said first stage (equal to said indicative opposite logic level) and said individual parallel data output word to said port, and;

(2) means responsive to said series of clock pulses for signalling to said interface control means when said output means has transferred said individual output data word to said port and for then initiating a load operation to reset said first stage to said predetermined logic level;

(c) said interface control means being connected to said data input means and said data output means, and connected to said weighing cell for

(1) receiving said parallel input words individually, sequences of said words defining a plurality of types of messages;

(2) in response to one particular type of said messages, receiving weight information from said weighing cell; and,

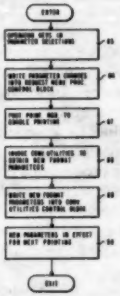
(3) transferring said parallel data output words representative of said weight information to said output means.

4,642,792

DATA PROCESSOR PRINTER SETUP THROUGH A REMOTE DISPLAY TERMINAL

Silous F. Clements, Georgetown; Patrick D. Motola, and Shirley F. Swift, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 450,860, Dec. 20, 1982, abandoned. This application Nov. 15, 1985, Ser. No. 798,703
Int. Cl.[4] G06F *3/12*
U.S. Cl. 364—900 **6 Claims**



1. In a data processing system comprising a host processor and a remote printer controlled by said host processor to print alphanumeric data from a data stream communicated from said host to said printer, the improvement comprising

an intermediate processor, connected between said host processor and said remote printer, having an interactive display terminal, said intermediate processor comprising,

means connected between said interactive display terminal and said printer for controlling the set-up of format parameters of documents containing said alphanumeric data from said host processor,

means connected to said host processor and said display terminal for displaying to an operator on said display terminal the format parameters of said documents available for said set-up controlling means,

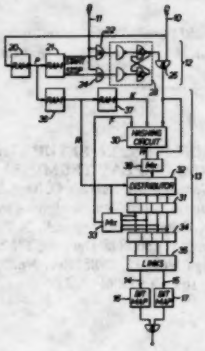
means connected to said interactive terminal and said printer for disabling printing of said printer of said alphanumeric data from said host processor during said controlling of the set-up of format parameters having new format parameters, said controlling means responding to selection of the new format parameters by the operator for dynamically changing said format parameters utilized by said remote printer in printing said documents containing data from the host processor, and

means connected to said host processor and said printer for enabling printing of said printer of said alphanumeric data with said new format parameters.

4,642,793
MANY-TO-ONE MAPPING HASH ADDRESS GENERATOR

Dan F. Meaden, Stevenage, England, assignor to International Computers Limited, London, England

Filed Mar. 19, 1984, Ser. No. 590,786
Claims priority, application United Kingdom, Mar. 24, 1983, 8308148
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—900 2 Claims



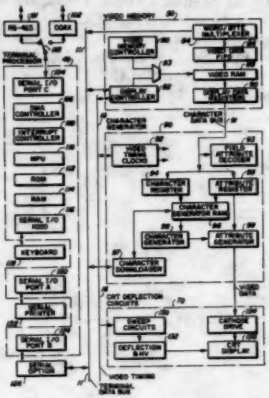
1. A data transformation circuit comprising:
(a) input means for receiving aninput data value,
(b) a hashing key memory for storing a plurality of values,
(c) means connected to the hashing key memory for reading out one of said values to provide a hashing key,
(d) a result register comprising a plurality of sections,
(e) control means for producing a control signal identifying a selected one of the sections of the result register,
(f) selection means, connected to the result register and responsive to said control signal to read out said selected one of the sections of the result register to provide a feedback value,
(g) hashing means connected to receive said input data value from the input means, the hashing key from the hashing key memory and the feedback value from the selection means, for combining said input data value, hashing key and feedback value to produce a hash value, and
(h) distribution means connected to receive said hash value from the hashing means and responsive to said control signal from the control means, for writing said hash value into said selected one of the sections of the result register.

4,642,794
VIDEO UPDATE FIFO BUFFER

Michael G. Lavelle; Claude A. Goldsmith, and Allin D. Kingsbury, all of San Jose, Calif., assignors to Motorola Computer Systems, Inc., Cupertino, Calif.

Filed Sep. 27, 1983, Ser. No. 536,913
Int. Cl.[4] G06F *3/153;* G09G *1/06*
U.S. Cl. 364—900 13 Claims

1. A data processing system comprising:
a central processor;
a terminal communicating with said central processor, said terminal comprising:
a terminal processor,
a terminal memory connected to said terminal processor for storing data, instructions, and the results of processing operations performed at said terminal,
a display, said display having a trace time during which information is written to said display, and a retrace time during which information is not written to said display,
a display memory for storing information to be displayed by said display,
means for conveying said information stored in said display memory to said display during said trace time,
buffer means coupled between said terminal processor and said display memory,

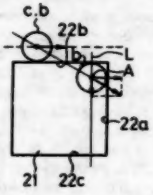


means for reading information from said display memory to said buffer means during said retrace time, and
means for writing said information back to said display memory during said retrace time in such a manner as to scroll vertically a portion of a line of information being displayed by said display.

4,642,795
THERMOMAGNETIC RECORDING SYSTEM

Hitoshi Tamada, Kawasaki; Masahiko Kaneko; Tsutomu Okamoto, both of Yokohama, and Toshiro Yamada, Kamakura, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP84/00152, § 371 Date Aug. 20, 1984, § 102(e) Date Aug. 20, 1984, PCT Pub. No. WO84/03991, PCT Pub. Date Oct. 11, 1984
PCT Filed Mar. 30, 1984, Ser. No. 643,975
Claims priority, application Japan, Mar. 31, 1983, 58-55653
Int. Cl.[4] G11C *19/08*
U.S. Cl. 365—10 5 Claims

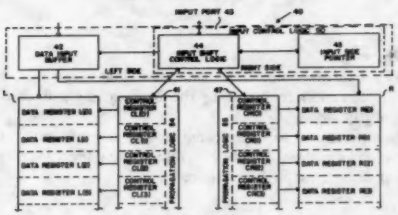


1. A thermomagnetic recording system in which a layer of soft magnetic material capable of holding and moving cylindrical magnetic domains is provided, said layer of soft magnetic material having an easy axis of magnetization normal to the layer surface and being magnetized in one direction by applying an external bias magnetic field thereto, and a cylindrical magnetic domain magnetized in the direction opposite to said magnetization direction is formed in said layer by irradiating a light beam on said layer surface, wherein said layer of soft

magnetic material is provided with a region having different magnetic energy from that of other region for said cylindrical magnetic domain, said cylindrical magnetic domain is held at a first stable position within said region, another cylindrical magnetic domain formed by the irradiation of a light beam is placed at a position apart by a predetermined distance from said cylindrical magnetic domain held at said first stable position and said light beam, under the condition that said light beam moves together with said another cylindrical magnetic domain, is moved to thereby move said cylindrical magnetic domain positioned at said first stable position along the border of said region to a second stable position within said region.

4,642,796
Patent Not Issued For This Number

4,642,797
HIGH SPEED FIRST-IN-FIRST-OUT MEMORY
Barry A. Hoberman, Palo Alto, Calif., assignor to Monolithic Memories, Inc., Santa Clara, Calif.
Filed Nov. 10, 1983, Ser. No. 551,735
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—221 **13 Claims**



1. A FIFO memory system comprising

a memory having N word storage locations arranged in M fall-through columns 0, . . .,M−1 where M≧2 and N=0 (Mod M) and where the kth fall-through column comprises data registers DR(k,0), . . . , DR(k, N/M−1) for k=0, . . . , M−1;

an input port for receiving a sequence of data words W(i);

a column of control registers CR(k,0), . . . , CR(k, (N/M)−1) for k=0, . . . , M−1 for propagating a data word in data register DR(k,j) to data register DR(k,j+1) if and only if data register DR(k,j+1) is empty, k=0, . . . , M−1; j=0, . . . , (N/M)−2;

a word propagation logic WPL(k) for each column k=1, . . . M−1 for detecting when a control register CR(k,j) indicates that its associated data register DR(k,j) is empty or full and for initiating a transfer of data from data register DR (k,j) to DR(k,j+1) when DR(k,j) is full and DR(k,j+1) is empty, k=0, . . . M−1; j=0, . . . , (N/M)−2.

an input data buffer for receiving said sequence W(i), i=0,1, . . . , of data words (where i<j if and only if W(i) is received before W(j) and for presenting said sequence of data words to said data registers DR (k,0) for k=1, . . . , (M−1);

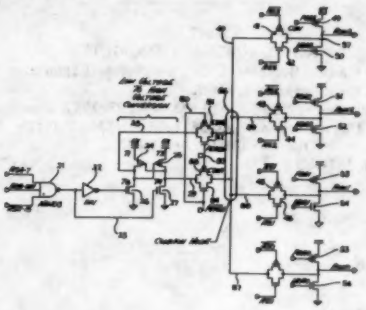
an input control logic for directing said input port to shift said data words W(i), i=0,1 . . . , in the order received by said input data buffer into said data registers DR (k,0) for k=1, . . . , (M−1) so that the data word W(i) is shifted into the data register DR(i(mod M),0) only if data register DR(i(mod M),0) is empty;

an output port for presenting said sequence of data words W(i), to an external circuit;

an output data buffer for receiving said data words from the data registers DR(k,(N/M)−1) for k=0, . . . , M−1, and for presenting said data words at said output port; and

an output control logic for directing said output data buffer to sense the data word W(0) from the data register DR (0, (N/M)−1) and to present the sensed data word W(0) to the output port, and for shifting the data word W(0) from the data register DR (0,(N/M)−1), and for directing said output data buffer to sense the data word W(i) from the data register DR (i(mod M), (N/M)−1) and to present the sensed data word W(i) to the output port only if data word W(i−1) has previously been sensed from data register DR ((i−1)(modM), (N/M)−1) and presented to the output port where i=1, 2, . . . , and for shifting the data word W(i) from the data register DR (i mod M, (N/M)−1).

4,642,798
CMOS E²PROM DECODING CIRCUIT
Kameswara K. Rao, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Oct. 1, 1985, Ser. No. 782,429
Int. Cl.[4] G11C *8/00*; H03K *19/096*
U.S. Cl. 365—230 **9 Claims**



1. A CMOS electrically erasable, read only memories (E^2-PROM) static decoding circuit comprising:

a first decoding means for receiving first address signals and for providing a first signal when said first address signals are in a predetermined state;

a conversion means coupled to said first decoding means for converting said first signal into second and third signals;

a pair of first switches coupled to said conversion means and to a first node, said first switches for providing one of said second and third signals to said first node;

a plurality of said switches coupled to said node and to a plurality of second nodes, said second switches for passing said selected signal of said first node to said second nodes, said second nodes each coupled to at least one memory cell;

first and second transistors coupled to each of said second nodes, said first and second transistors providing fourth and fifth signals at said second nodes;

whereby signals may be provided to selected of said memory cells.

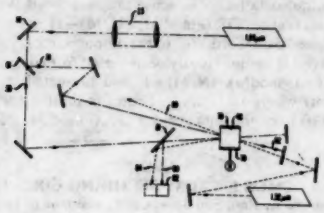
4,642,799
SYSTEM AND PROCESS FOR OPTICAL PROCESSING OF INFORMATION
Alastair M. Glass, Rumson, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 30, 1984, Ser. No. 676,676
Int. Cl.[4] G11C *11/34*
U.S. Cl. 365—114 **20 Claims**

1. An optical processing system comprising (1) at least one light beam carrying a signal to be processed; (2) a recording medium that undergoes a refractive index change in response to said signal or said signal after processing; and (3) at least one light beam capable of allowing the reading of refractive index variations in said recording medium

characterized in that

said recording medium comprises a semiconductor material and a dopant wherein said dopant is present in recording

regions of said recording medium in a concentration sufficient to yield a resistivity in the range 10^3 to 10^9 ohm-cm,



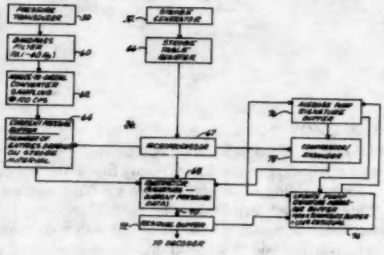
and wherein a substantial portion of said resistivity is due to said dopant.

4,642,800

NOISE SUBTRACTION FILTER

Takato Umeda, Berkeley, Calif., assignor to Exploration Logging, Inc., Sacramento, Calif.

Continuation of Ser. No. 410,573, Aug. 23, 1982, abandoned.
This application Aug. 26, 1985, Ser. No. 769,129
Int. Cl.[4] G01V 1/40; H03K 5/01
U.S. Cl. 367—85 11 Claims



1. A method of filtering noise from signals having a data component and a cyclical noise component having a substantially unidirectional polarity comprising averaging a predetermined number of the cyclical signals to produce an average signature signal in synchronism with the cyclical noise component, updating the average signature signal each cycle to produce a current average signature signal, and subtracting the current cyclical signals and the current average signature signals from one another to produce a residual signal which contains the data component, with the average signature signal being updated by adding a fraction of the residual signal to a fraction of the current average signature signal.

4,642,801

VISUAL DISPLAY PROCESS FOR SONARS

Didier Perny, Brest, France, assignor to Thomson-CSF, Paris, France

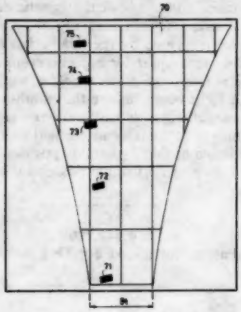
Filed Apr. 9, 1984, Ser. No. 597,861
Claims priority, application France, Apr. 12, 1983, 83 05938
Int. Cl.[4] G01S 7/56
U.S. Cl. 367—88 2 Claims

2. A process for visually displaying on a cathode ray tube objects at a depth H on the sea bed, the processing comprising:

using a classification sonar for detecting the objects, each object having a slant range ρ and a bearing angle θ to the sonar, the sonar producing video signals and a minimum slant range ρ_{min} for each object;

using a sounder to determine the depth H;

first scanning the cathode ray tube along a horizontal direction X with a plurality of successive sawtooth-shaped scan



signals of constant width and maximum amplitude increasing according to the relationship

$$(X)_{max} = X_0 \sqrt{\frac{\rho^2 - H^2}{\rho_{min}^2 - H^2}}$$

where

X_0 is a value defined by the minimum slant range ρ_{min}, the X direction representing the bearing angle θ of the object; and

simultaneously second scanning the cathode ray tube along a vertical direction Y, representing the slant range ρ, according to the relationship

$$Y = \frac{k}{2} H \log \left[\frac{\rho^2 - H^2}{\rho_{min}^2 - H^2} \right]$$

where

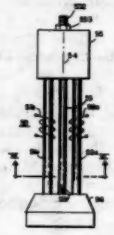
k is a constant of proportionality.

4,642,802

ELIMINATION OF MAGNETIC BIASING USING MAGNETOSTRICTIVE MATERIALS OF OPPOSITE STRAIN

William M. Pozzo, North Easton, and John L. Butler, Marshfield, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 14, 1984, Ser. No. 682,023
Int. Cl.[4] H04R 15/00; H01L 41/06
U.S. Cl. 367—168 7 Claims



1. A transducer comprising:

a positive strain magnetostrictive material;

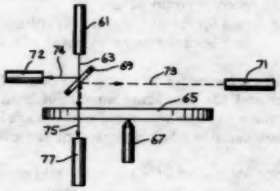
a negative strain magnetostrictive material;
a tail mass and a head mass;
means for compressing said positive and negative materials between said tail and head masses;
means for applying a first magnetomotive force to said positive strain material for first intervals of tiine;
means for applying a second magnetomotive force to said negative strain material for second intervals of time;
said first and second intervals of time alternating and being noncoincident; and
said head mass undergoing positive and negative movement with respect to said tail mass in response to said first and second magnetomotive forces.

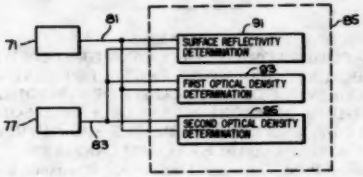
4,642,803

OPTICAL DATA RETRIEVAL SYSTEM FOR MULTI-CHARACTERISTIC REFLECTIVE DATA STORAGE MEDIA

Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Continuation of Ser. No. 406,719, Aug. 9, 1982, abandoned. This application Mar. 4, 1985, Ser. No. 707,538
Int. Cl.[4] G11B *27/36, 7/00*
U.S. Cl. 369—54 **10 Claims**





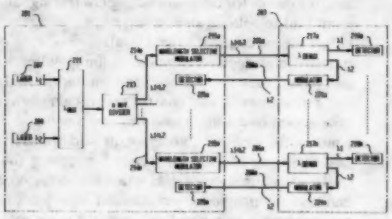
1. A laser system for reading data on an optical data storage medium having different optical characteristics comprising,
a data medium having a high reflectivity surface layer and a light absorptive underlayer, the medium having prerecorded data of a first absorptivity and user recorded data of a second absorptivity, and imperfections having a third absorptivity, each of the data and the imperfections having different combinations of specularly reflected and optically transmitted beam components with respect to an incident laser beam,
first and second detector means for simultaneously detecting said specularly reflected and optically transmitted beam components and generating first and second electrical signals corresponding to a quantity of light received,
correlation means connected to said detector means for comparing the levels of said electrical signals with stored reference levels of specular reflectivity and optical transmissivity, the combination of said levels being indicative of different data and imperfection conditions of the medium, said levels from said detector means being first converted to ratiometric values in accordance with the strength of said incident laser beam.

4,642,804

SHARED LASER LIGHTWAVE TRANSMISSION SYSTEMS

Stewart D. Personick, Middletown, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed May 10, 1985, Ser. No. 732,556
Int. Cl.[4] H04B *9/00*
U.S. Cl. 370—3 **10 Claims**



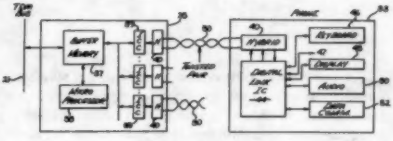
1. An optical transmission network comprising
(a) a first coherent light source for emitting radiation at a first wavelength λ_1,
(b) a second coherent light source for emitting radiation at a second wavelength λ_2,
(c) a wavelength multiplexer for receiving wavelength λ_1 radiation from said first light source and wavelength λ_2 radiation from said second light source, said wavelength multiplexer being adapted to output multiplexed radiation comprising a wavelength λ_1 component and a wavelength λ_2 component,
(d) power dividing means for distributing an aliquot portion of said multiplexed radiation over each of a plurality of transmission paths, and
(e) wavelength selective modulator means incorporated in at least one of said transmission paths for modulating information onto the λ_1 component of said multiplexed radiation transmitted over said one transmission path.

4,642,805

DIGITAL LINK FOR TELEPHONE STATION SETS

Gregory P. Dumas, Milpitas, and Philip H. Sutterlin, Sunnyvale, both of Calif., assignors to Rolm Corporation, Santa Clara, Calif.

Filed Jun. 25, 1984, Ser. No. 624,249
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—58 **31 Claims**



1. A digital link apparatus for providing digital communications between a branch exchange and a telephone station set comprising:
computer means for preparing messages in a predetermined format, said computer means coupled to said branch exchange;
uplink circuit means for receiving said messages from said computer means and for preparing said messages for transmission to said telephone station set, wherein said transmission is time division multiplexed;
a pair of lines coupled to said uplink circuit means for receiving said messages; and,
downlink circuit means coupled to said pair of lines for receiving said messages from said pair of lines and for

preparing said messages for coupling to said telephone station set, said downlink circuit means including;

(a) control means for receiving and transmitting control signals for said telephone set;

(b) timing means, synchronized with said messages carried by said pair of lines for coupling one field of voice data from said messages to said telephone station sets and another field of control data to said control means, said control means for communicating control signals to and from said telephone station set;

(c) logic means coupled to said control means for examining said messages and for determining when a newly completed message has been transmitted to said downlink circuit means, said control means being activated to take action based upon said new message; and

(d) means for detecting an error in said transmission of said messages and circuit means for reusing the previously transmitted voice data when said error is detected and also for providing a retransmit signal to provide a retransmission to resynchronize said timing means,

whereby an improved link is established between said exchange and said telephone station set.

4,642,806

COMMUNICATIONS NETWORK HAVING A SINGLE NODE AND A PLURALITY OF OUTSTATIONS

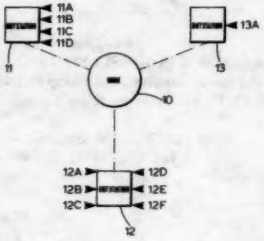
Michael T. H. Hewitt; John W. Ballance, both of Ipswich, and Richard P. I. Scott, Woodbridge, all of England, assignors to British Telecommunications Public Limited Company, Great Britain

Filed Sep. 5, 1984, Ser. No. 647,441

Claims priority, application United Kingdom, Sep. 7, 1983, 8323967; Oct. 14, 1983, 8327586

Int. Cl.⁴ H04J *3/02*

U.S. Cl. 370—95 **25 Claims**



1. A communication system comprising a single node and a plurality of outstations arranged for communication using two communication channels, one of said communication channels being used for communicating signals from the node to all of the outstations, the other of said communication channels being shared by all of the outstations,

wherein said communcation takes the form of traffic bursts within successive frame periods,

each burst including a marker signal for synchronization

wherein the node includes a plurality of burst extraction means for extracting respective selected bursts from received signal frames;

wherein the outstations each include at least one burst extraction means for extracting respective selected bursts from received signal frame; and

wherein each burst extraction means includes frame synchronization means responsive only to the marker signals within its respective bursts.

4,642,807

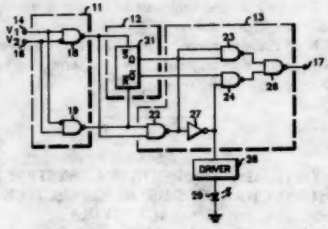
FAULT TOLERANT RECEIVER

Richard A. Comroe, Dundee, and Adelore F. Petrie, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 18, 1984, Ser. No. 682,867

Int. Cl.⁴ G06F *11/00*; H04L *1/00*

U.S. Cl. 371—31 **11 Claims**



1. A fault tolerant signal receiver for use with differential voltage level transmission systems from which at least two voltage levels may be substantially simultaneously sensed to allow said at least two voltage levels to be decoded into digital signals, said receiver comprising:

(a) input means for receiving said two voltage levels and for producing at least one output related to said two voltage levels;

(b) first logic means for receiving said output from said input means and for producing an output, said output being selectively variable when said two voltage levels are valid and non-variable when said two voltage levels are invalid; and

(c) second logic means for receiving said output of said first logic means and for correctly outputting said decoded digital signal, provided, that said transmission system has no more than one fault condition.

4,642,808

DECODER FOR THE DECODING OF CODE WORDS WHICH ARE BLOCKWISE PROTECTED AGAINST THE OCCURRENCE OF A PLURALITY OF SYMBOL ERRORS WITHIN A BLOCK BY MEANS OF A REED-SOLOMON CODE, AND READING DEVICE FOR OPTICALLY READABLE RECORD CARRIERS

Constant P. M. J. Baggen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 562,611, Dec. 19, 1983, abandoned. This application Jan. 30, 1986, Ser. No. 824,299

Claims priority, application Netherlands, Jun. 22, 1983, 8302214

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—39 **11 Claims**

1. A decoding system for decoding multisymbol code words that are protected by means of a Reed-Solomon code against occurrence of multiple symbol errors within one code word, said system comprising:

a. receiving means for sequentially receiving the code symbols of a code word;

b. first calculating means fed by said receiving means and comprising a first multiplier for generating a series of syndrome symbols for a code word by means of multiplication with the parity check matrix (H) of the code;

c. second calculating means (104) fed by the first calculating means and having sequencing means for sequentially accessing a series of first to eighth program steps, to wit:

c1. a first program step for assuming L=0 symbol errors in

the actual word for thereupon accessing a second program step;

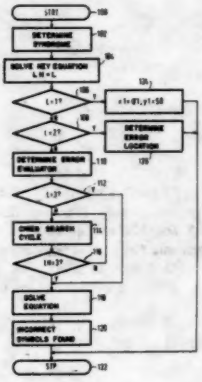
c2. the second program step for activating a second multiplier for solving for the actually postulated number of L symbol errors by means of the first N=2L syndrome symbols a key equation that is limited to those N syndrome symbols, according to Cramer's rule and for thereupon accessing a third program step;

c3. the third program step for determining the value of the discrepancy delta 1 and for thereupon accessing a fourth program step;

c4. the fourth program step for determining a non-zero value of delta 1 (138) and thereupon re-accessing the second program step while incrementing the current value of L and repeating the solving of the key equation by means of matrix incrementation operations, but upon determination a zero value of delta 1 (138) accessing a fifth program step;

c5. the fifth program step for incrementing the number N by way of postulating a quasi-symbol error and recalculating the value of the discrepancy delta 1 as based on any current symbol errors and quasi-symbol errors, and for thereupon accessing a sixth program step;

c6. the sixth program step for determining a non-zero discrepancy delta 1 for thereupon accessing the third



program step while supplementing the key equation for any actual quasi-symbol error then operating as additional symbol error but for otherwise accessing a seventh program step;

c7. the seventh program step for comparing the actual value of N with a predetermined value Nmax given by the current number of non-quasi symbol errors and for a too-low value of N accessing the fifth program step but for a sufficiently high value of N accessing an eighth program step;

c8. the eighth program step for in case the key equation featuring at least a predetermined number of symbol errors obtaining the error locator sigma (Z) and the error evaluator omega (Z);

d. third calculating means fed by said second calculating means for determining any zero point of the error locator to obtain corresponding positions of code symbols liable to be incorrect;

e. fourth calculating means fed by said third calculating means for determining from said zero points any symbol error associated with incorrect code symbols, which incorrect code symbols are correctable through combination of error value and associated position data.

4,642,809

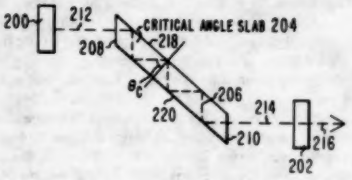
SLAB ACTIVE LASING MEDIUM

John C. Petheram, Middlesex County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 28, 1985, Ser. No. 707,042

Int. Cl.⁴ H01S *3/06*

U.S. Cl. 372—66 **11 Claims**



1. A slab to be used as an active lasing medium for a slab laser having wave energy traveling in a zig-zag path the length of said slab between the end faces thereof, to provide a gain length for said slab laser which is proportional to the total length of said zig-zag path said slab being composed of a material exhibiting a given index-of-refraction which exceeds that of its surroundings by an amount such that the critical angle for said traveling wave energy has a predetermined value;

said slab having each of its end faces cut at an angle having a value such that said traveling wave energy in said slab is incident at that end face at substantially the predetermined value of said critical angle to substantially increase the total length of said zig-zag path, and hence said gain length of said slab laser.

4,642,810

REPETITIVE SEQUENCE DATA TRANSMISSION SYSTEM

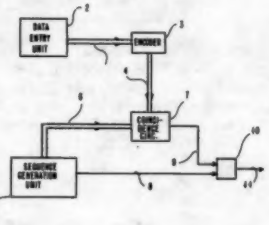
Jean-Louis Picard, La Colle-sur-Loup, France, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 15, 1983, Ser. No. 561,848

Claims priority, application European Pat. Off., Dec. 28, 1982, 82430047.9

Int. Cl.⁴ H04L *27/00*

U.S. Cl. 375—37 **5 Claims**



1. A repetitive sequence data signal transmission system having a transmitter means and a receiver means interconnected by a data signal transmission medium:

said transmitter means including:

first selectively operable means (13) for providing at an output thereof (4) a coded data signal corresponding to the operation selected,

a first repetitive sequence generating means (5) for generating in a synchronous manner a plurality of bits arranged according to a repetitive sequence and providing said repetitive sequence in series on a first output (8) and providing on a second parallel output (6) for each bit in the sequence a unique bit pattern,

a coincidence circuit means (7) having a first input connected to the output of the first selectively operable means (4) and a second input connected to the second parallel output of the said first repetitive sequence generation means (6) for providing on an output of the coincidence circuit means (9) an output signal whenever coincidence exists between the signal applied to the said first and second inputs of the said coincidence circuit means, and

a first exclusive OR circuit means (10) having a first input connected to the output of the said coincidence circuit means (9) and a second input connected to the first output (8) of the first repetitive sequence generating means for supplying at an output thereof the bit sequence received from the first output of the first repetitive sequence generating means except when the output from the coincidence circuit means provides an output signal indicating that coincidence exists between the first and second inputs thereto and for inverting at its output the bit received at the second input whenever the coincidence circuit means signals a coincidence between the first and second inputs thereto via a signal on its output, and

means connecting the output of the first exclusive OR circuit means to one end of the said data signal transmission medium;

said receiver means including;

a second repetitive sequence generation means (61–65) for generating in a synchronous manner a plurality of bits arranged according to the same repetitive sequence as the said first repetitive sequence generation means included in the said transmitter means, said second repetitive sequence generation means having a first output (71) for providing the said sequence of bits in series and a second output (80–83) providing a unique parallel output signal for each bit in the sequence,

a second exclusive OR circuit means having a first input connected to the other end of said data signal transmission medium and a second input connected to the said first output of the said second repetitive sequence generation means for providing at an output thereof an output control signal whenever the signals received at the said first and second inputs of the said second exclusive OR circuit means differ from each other on a bit by bit basis, and

gate circuit means connected to the said second output of the said second repetitive sequence generation means for providing the said output to a utilization means under control of the said output control signal provided by the said second exclusive OR circuit means.

4,642,811

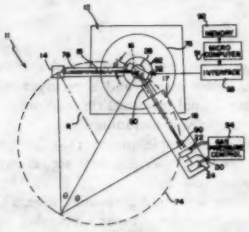
EXAFS SPECTROMETER

Panayotis Georgopoulos, Northbrook, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Jun. 12, 1984, Ser. No. 619,841

Int. Cl.⁴ G01N *23/08*

U.S. Cl. 378—53 **40 Claims**



1. An apparatus for performing X-ray absorption fine structure measurements on a specimen by using a source X-ray beam and an assembly adapted to carry out a set of predetermined operating conditions, comprising:

a monochromator crystal means rotatably positioned at the center of said assembly for diffracting said source X-ray beam to provide a monochromatic X-ray beam for selected angles of incidence of said source X-ray beam with respect to said crystal means, and in accordance with said predetermined operating conditions said crystal means providing said monochromatic X-ray beam having a different wavelength upon changing to a different respective associated one of said angles of incidence;

deforming means for automatically distorting said monochromator crystal means at said angles of incidence to provide said monochromatic X-ray beam having said different wavelength at said respective associated angles of incidence;

detector means for measuring the intensity of said monochromatic X-ray beam before and after passing through said specimen; and

stage means for supporting said specimen and said detector means, said stage means being slidingly engaged with a receiving track of said assembly to enable movement on said track to an angular position twice that of said respective associated angle of incidence of said X-ray beam with said crystal means.

4,642,812

SOUND FIELD ENLARGING DEVICE AND METHOD

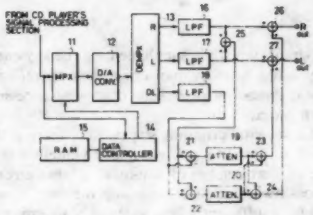
Junichi Yoshio; Toshio Hirano; Kenichiro Yasukawa, and Masayuki Yoshida, all of Saitama, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

Filed Apr. 23, 1985, Ser. No. 726,267

Claims priority, application Japan, Apr. 23, 1984, 59-58456[U]

Int. Cl.⁴ H04R *5/00*

U.S. Cl. 381—1 **10 Claims**



1. A sound field enlarging device for a reproducing apparatus supplying right-channel and left-channel signals as a sequence of pairs of digital data, comprising:

means for calculating a sum datum for each of said pairs of digital data; 'means for delaying the sum data for a predetermined delay period relative to the corresponding pairs of digital data;

means for converting said digital data pairs and the delayed sum data to corresponding analog signals; and

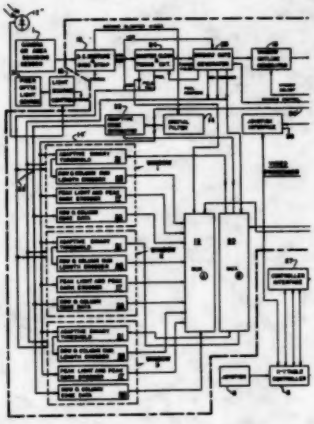
means for combining said analog signals to produce output right-channel and left-channel signals with a negative correlation between said output right-channel and left-channel signals.

4,642,813

ELECTRO-OPTICAL QUALITY CONTROL INSPECTION OF ELEMENTS ON A PRODUCT

Joseph Wilder, Princeton, N.J., assignor to Object Recognition Systems, Inc., Princeton, N.J.

Filed Apr. 18, 1983, Ser. No. 486,245
Int. Cl.[4] G06K 9/00
U.S. Cl. 382—8 18 Claims



10. Apparatus for optically inspecting a graphic pattern on a product to see if it matches the graphic pattern of a previously examined training sample, comprising

a video camera,

a means to position a training product and later a production product, so that the camera scans a rectangular frame portion on the product,

window gate means operative to define an electronic window in the frame, and to pass the video signal from said camera solely during scans through said window,

video signal processing means operative to translate the video signal passed by said window gate means into row signals including in a first category signals representing the number of each row scan line of vertical edges V, and in a second category signals representing the number of horizontal down edge points Hdn, and the number of horizontal up edge points Hup, and into column signals including in a third category signals representing the number in each column of horizontal edge points H, and signals in a fourth category representing the number of vertical down edge points Vdn, and the number of vertical up edge points Vup,

means to compare the V signals, and Hdn and Hup signals, the H signals and the Vdn and Vup signals, obtained from scanning the product pattern, with corresponding signals obtained from scanning the training pattern,

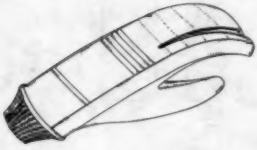
said signals in each of the four categories of signals being the averages of signals obtained over a plurality of frame scans, and

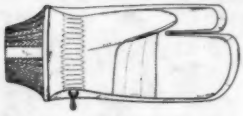
means to data-reduce said signals by averaging the signals in the first category V, and averaging the signals in the second category Hdn and Hup, over a plurality of successive rows, and by averaging the signals in the third category H, and averaging the signals in the fourth category Vdn and Vup, over a plurality of successive columns.

288,140
COMBINED WHISTLING LOLLIPOP AND MUSICAL SLIDE
Enrique B. Fontlladosa, Av. Diagonal 662-664 5a, Barcelona 08034, Spain
Filed Mar. 7, 1983, Ser. No. 472,756
Term of patent 14 years
U.S. Cl. D1—106

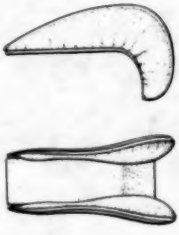
288,141
EAR MUFFS
Richard D. Pozzini, 5545 Dugan Ave., St. Louis, Mo. 63110
Filed Feb. 9, 1984, Ser. No. 578,578
Term of patent 14 years
U.S. Cl. D 29/19

288,142
SKI MITT
A. Wellborn Gregg, 2615 Durban Dr., Houston, Tex. 77043
Continuation of Ser. No. 582,397, Feb. 24, 1984, abandoned.
This application Feb. 24, 1986, Ser. No. 833,434
Term of patent 14 years
U.S. Cl. D2—610



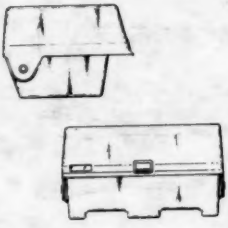


288,143
WINGED PAD FOR KNEE CRUTCH
S. Glenn Scott, Memphis, Tenn., assignor to Professional Specialties Co., St. Louis, Mo.
Filed Apr. 2, 1984, Ser. No. 595,666
Term of patent 14 years
U.S. Cl. D3—8



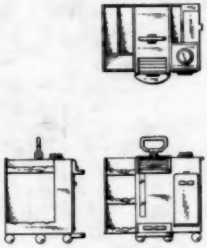
288,144
UMBRELLA HANDLE
Ann S. Cain, Cincinnati, Ohio, assignor to 'totes', incorporated, Loveland, Ohio
Filed Jan. 21, 1986, Ser. No. 820,601
Term of patent 14 years
U.S. Cl. D3—12

288,145
DISK STORAGE AND CARRYING CASE
Allan R. Northrup, and John G. Tomkinson, both of King County, Wash., assignors to Amaray International Corporation, Redmond, Wash.
Filed Apr. 12, 1985, Ser. No. 722,344
Term of patent 14 years
U.S. Cl. D3—35



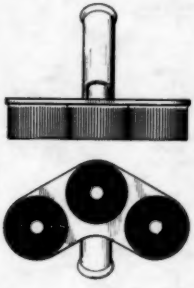
288,146
FOOD TOTE BAG
Janet F. Cathcart, 2210 Wilshire Blvd., #314, Santa Monica, Calif. 90403, and Kathleen Ingersoll, 2002 E. 20th St., Santa Ana, Calif. 92701
Filed Jul. 2, 1984, Ser. No. 626,976
Term of patent 14 years
U.S. Cl. D3—42

288,147
COMBINED DISPENSER AND CADDY FOR BABY TOILETRIES
Jonathan Helinsky, 198 Woodward Ave., Staten Island, N.Y. 10314
Filed May 30, 1984, Ser. No. 615,467
Term of patent 14 years
U.S. Cl. D3—74



288,148
TOOTHBRUSH
Paul Malgrain, Paris, France, assignor to La Brosse et Du Pont, Paris, France
Filed Oct. 23, 1984, Ser. No. 663,912
Term of patent 14 years
U.S. Cl. D4—104

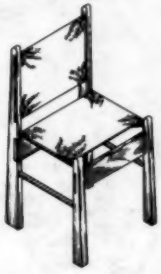
288,149
CARPET DEODORIZER APPLICATOR BRUSH
Theodore J. Hasler, Chicago, Ill., assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jul. 9, 1984, Ser. No. 628,999
Term of patent 14 years
U.S. Cl. D4—114



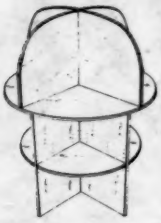
288,150
EMBOSSED PAPER TOWELING
Galyn A. Schulz, Appleton; Kenneth E. Bredendick; Chester W. Gooding, Jr., both of Neenah, and Allen C. Schumacker, Kimberly, all of Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.
Filed Mar. 23, 1983, Ser. No. 478,161
The portion of the term of this patent subsequent to Dec. 21, 1996, has been disclaimed.
Term of patent 14 years
U.S. Cl. D5—53

288,151
DISASSEMBABLE CHAIR
Richard D. Lindstrom, P.O. Box 10610, Bainbridge Island, Wash. 98110
Filed Aug. 7, 1984, Ser. No. 638,444
Term of patent 14 years
U.S. Cl. D6—358

288,152
CHILD'S CHAIR
Charles E. Spinale, Barrington, and Andrew J. Kaplan, Portsmouth, both of N.H., assignors to Kinderworks Corporation, Portsmouth, N.H.
Filed Jun. 1, 1984, Ser. No. 616,414
Term of patent 14 years
U.S. Cl. D6—380

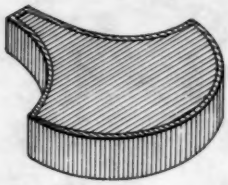


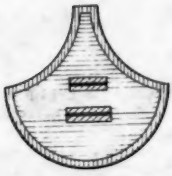
288,153
DISPLAY STAND
Sture Engstrand, Gustavsberg, Sweden, assignor to Aktiebolaget Gustavsberg, Gustavsberg, Sweden
Filed Sep. 25, 1984, Ser. No. 654,313
Claims priority, application Sweden, Mar. 28, 1984, 841027
Term of patent 14 years
U.S. Cl. D6—460



288,154
DISPLAY STAND
Barbara J. Hobgood, P.O. Box 83, Bristow, Okla. 74010
Filed Apr. 16, 1984, Ser. No. 600,997
Term of patent 14 years
U.S. Cl. D6—466

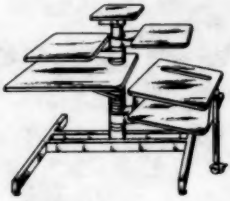
288,155
JEWELRY DISPLAY STAND
Dennis L. Crawford, Carrollton, Tex., assignor to Lenox, Incorporated, Lawrenceville, N.J.
Filed May 11, 1984, Ser. No. 609,124
Term of patent 14 years
U.S. Cl. D6—467



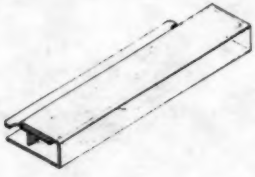


288,156
WINE RACK
Martin Nuncio, 4015 Brookhaven Club Dr., Apt. 303, Dallas, Tex. 75234
Filed Oct. 22, 1984, Ser. No. 663,192
Term of patent 14 years
U.S. Cl. D6—468

288,157
MODULAR COMPUTER SUPPORT AND DISPLAY STAND
Joseph Sandor, Woodland Hills, Calif., assignor to Frontline Products, Inc., Glendale, Calif.
Filed Apr. 24, 1984, Ser. No. 603,573
Term of patent 14 years
U.S. Cl. D6—474

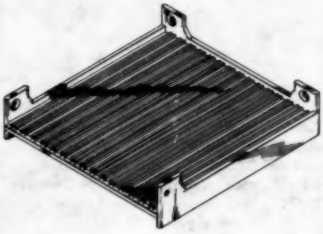


288,158
HAND REST
Bennett F. Dunnington, R.R. 2, Box 198E, Iowa City, Iowa 52240
Filed Jul. 31, 1984, Ser. No. 636,394
Term of patent 14 years
U.S. Cl. D6—491

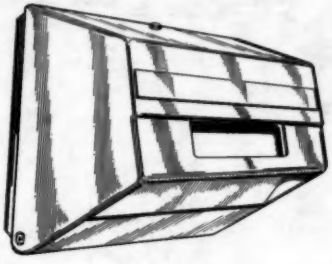


288,159
TABLE FRAME
Robert C. Winzeler, III, Montpelier, Ohio, assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Jun. 18, 1984, Ser. No. 621,603
Term of patent 14 years
U.S. Cl. D6—495

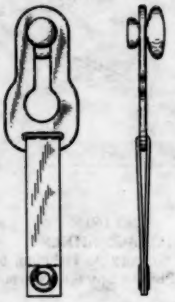
288,160
STORAGE SHELF
Ralf P. Maroney, and Gregory A. Fishkind, both of Milford, Conn., assignors to Plug-In Storage Systems, Inc., Milford, Conn.
Filed Jul. 25, 1984, Ser. No. 634,264
Term of patent 14 years
U.S. Cl. D6—511



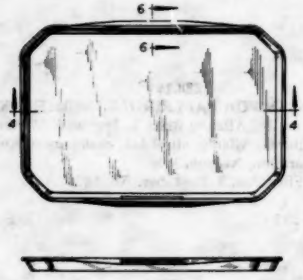
288,161
DISPENSER FOR PAPER ROLL OR THE LIKE
Calvin L. Payne, Jr., Atlanta; Brian E. Ingersoll, Marietta, and Rickey D. Burns, Atlanta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jan. 3, 1984, Ser. No. 567,706
Term of patent 14 years
U.S. Cl. D6—522

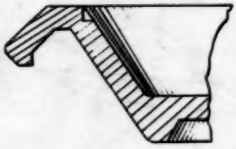


288,162
BEDCLOTHES FASTENER FOR A WATERBED
William B. Hutton, and Deanice B. Hutton, both of 34452 Bachelor Flat Rd., St. Helens, Oreg. 97051
Filed Mar. 26, 1984, Ser. No. 593,320
Term of patent 14 years
U.S. Cl. D6—607

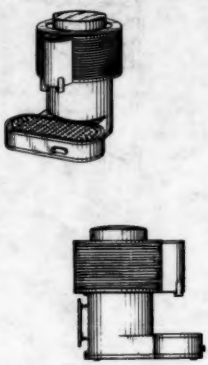


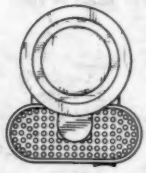
288,163
SERVING TRAY
Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands
Filed Oct. 5, 1983, Ser. No. 539,376
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1983, MR20974
Term of patent 14 years
U.S. Cl. D7—21



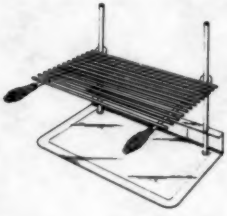


288,164
COFFEEMAKER
Franz A. Stützer, and Michael Knöchner, both of Offenbach, Fed. Rep. of Germany, assignors to Rowenta-Werke, GmbH, Fed. Rep. of Germany
Filed Oct. 19, 1984, Ser. No. 662,580
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 5 MR 10 525
Term of patent 14 years
U.S. Cl. D7—309





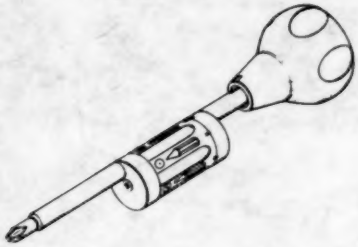
288,165
FIREPLACE COOKING GRILL INSERT
Craig R. Thomas, Cherokee, Iowa, assignor to R. J. Thomas Manufacturing Co., Inc., Cherokee, Iowa
Filed Sep. 13, 1984, Ser. No. 650,253
Term of patent 14 years
U.S. Cl. D7—408



288,166
GARDEN SHEAR CUFF
Alan K. Pittaway, High Wycombe, England, assignor to Wilkinson Sword Limited, High Wycombe, England
Filed Apr. 12, 1984, Ser. No. 599,404
Claims priority, application United Kingdom, Oct. 12, 1983, 1015687
Term of patent 14 years
U.S. Cl. D8—5

288,167
ELECTRIC PIPE THREADER AND PIPE CLAMP COMBINATION
Hans Urspruch, Stuttgart, Fed. Rep. of Germany, assignor to Albert Roller GmbH & Co. KG Werkzeug- und Maschinenfabrik, Waiblingen, Fed. Rep. of Germany
Filed Dec. 19, 1983, Ser. No. 562,973
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1983, GRIII1004/83; Aug. 4, 1983, GRIII1232/83
Term of patent 14 years
U.S. Cl. D8—61

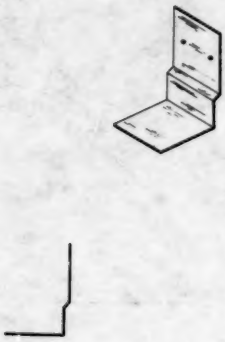
288,168
MULTIPLE-TIP TOOL
Charles H. Graham, Salt Lake City, Utah, assignor to Teknatool, Inc., North Salt Lake, Utah
Filed Jun. 25, 1985, Ser. No. 748,808
Term of patent 14 years
U.S. Cl. D8—85



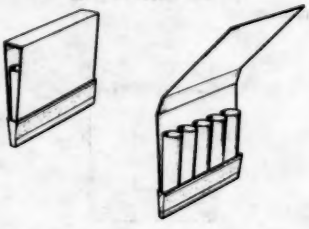
288,169
CUTLERY SHARPENER
Morton Cohen, 41-27 W. Moreland, Little Neck, N.Y. 11363
Filed Jul. 17, 1984, Ser. No. 631,746
Term of patent 14 years
U.S. Cl. D8—93

288,170
GAS PUMP NOZZLE CLIP AND KEY HOLDER
Will H. Foster, 11570 E. Snyder Rd., Tucson, Ariz. 85749
Filed Sep. 5, 1984, Ser. No. 647,510
Term of patent 14 years
U.S. Cl. D8—349

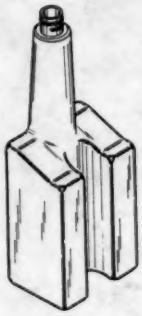
288,171
BATTERY CHARGER MOUNTING BRACKET
Ranjit Dey, 2465 Dunwin Drive, Unit 11, Mississauga, Ontario, Canada L5L 1T1
Filed Jun. 1, 1984, Ser. No. 616,234
Term of patent 14 years
U.S. Cl. D8—73



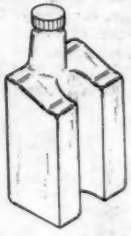
288,172
COMBINED DISPLAY AND STORAGE CONTAINER FOR HANDKERCHIEFS, SCARVES OR THE LIKE
William Kanellos, Park Forest, Ill., assignor to HGK Advertising, Inc., Chicago, Ill.
Filed Jul. 18, 1984, Ser. No. 632,048
Term of patent 14 years
U.S. Cl. D9—304



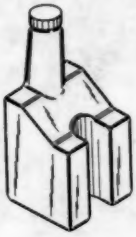
288,173
BOTTLE OR SIMILAR ARTICLE
Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.
Filed Jan. 30, 1985, Ser. No. 696,428
Term of patent 14 years
U.S. Cl. D9—375



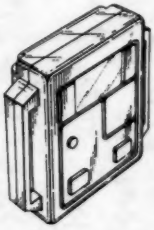
288,174
BOTTLE OR SIMILAR ARTICLE
Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.
Filed May 1, 1985, Ser. No. 729,423
Term of patent 14 years
U.S. Cl. D9—375



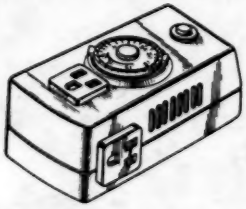
288,175
BOTTLE OR SIMILAR ARTICLE
Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.
Filed Jun. 24, 1985, Ser. No. 748,327
Term of patent 14 years
U.S. Cl. D9—375



288,176
STOPWATCH
Raymond Chan, Kowloon, Hong Kong, assignor to Integrated Display Technology Limited, Kowloon, Hong Kong
Filed Jul. 20, 1984, Ser. No. 632,884
Claims priority, application United Kingdom, May 15, 1984, 1019659
Term of patent 14 years
U.S. Cl. D10—30

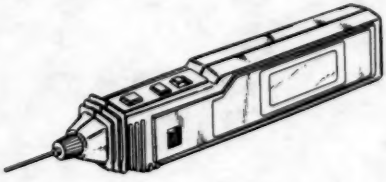


288,177
PRESET TIMER
Tai-Her Yang, 5-1, Tai-Pin Street, Si-Hu Town, Dzan-Hwa, Taiwan
Filed Sep. 12, 1984, Ser. No. 649,652
Term of patent 14 years
U.S. Cl. D10—40



288,178
THERMOMETER
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed. Rep. of Germany
Filed Jan. 27, 1984, Ser. No. 574,620
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, MR 146
The portion of the term of this patent subsequent to Aug. 20, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—58

288,179
DIGITAL MULTIMETER
Toshio Sekido, Sakaki, Japan, assignor to Soar Corporation, Japan
Filed Oct. 23, 1984, Ser. No. 663,876
Claims priority, application Japan, Apr. 23, 1984, 59-16468
Term of patent 14 years
U.S. Cl. D10—78



288,180
SOIL COMPACTION TESTER
Dale Shrull, Rte. 5, Box 31A, Russellville, Ky. 42276
Filed Oct. 2, 1985, Ser. No. 783,153
Term of patent 14 years
U.S. Cl. D10—83

288,181
KNITTING COUNTER FOR COUNTING AND RECORDING STITCHES OR ROWS
Takashi Matsubayashi, Habikino, Japan, assignor to Clover Manufacturing Co., Ltd., Osaka, Japan
Filed May 30, 1984, Ser. No. 615,230
Term of patent 14 years
U.S. Cl. D10—97

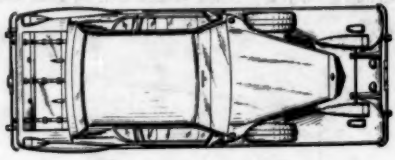
288,182
BASEBALL TROPHY
Freddy T. Lee, 2008 SW. 17th St., Boynton Beach, Fla. 33435
Filed Aug. 15, 1984, Ser. No. 641,062
Term of patent 14 years
U.S. Cl. D11—160

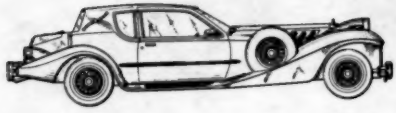
288,183
RACQUETBALL TROPHY
Freddy T. Lee, 2008 SW. 17th St., Boynton Beach, Fla. 33435
Filed Aug. 15, 1984, Ser. No. 641,064
Term of patent 14 years
U.S. Cl. D11—160

288,184
RUNNER TROPHY
Freddy T. Lee, 2008 SW. 17th St., Boynton Beach, Fla. 33435
Filed Aug. 15, 1984, Ser. No. 641,065
Term of patent 14 years
U.S. Cl. D11—161

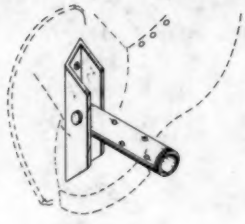
288,185
BUTTON
Alfred C. Derosa, 145 Dorwin Ave., Syracuse, N.Y. 13205
Filed Jun. 11, 1984, Ser. No. 619,535
Term of patent 14 years
U.S. Cl. D11—226

288,186
AUTOMOBILE
Thomas J. Crawford, Plantation, Fla., assignor to Classics Motor Carriages, Miami, Fla.
Filed Nov. 7, 1984, Ser. No. 669,268
Term of patent 14 years
U.S. Cl. D12—92

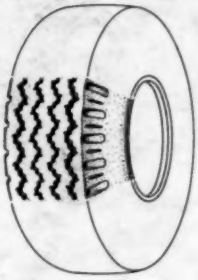




288,187
VEHICLE OPERATOR'S FOLD UP FOOT REST
Larry D. Morris, 5095 S. 6300 West, Hooper, Utah 84315
Filed Mar. 19, 1984, Ser. No. 590,634
Term of patent 14 years
U.S. Cl. D12—114



288,188
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio
Filed Dec. 12, 1984, Ser. No. 680,877
Term of patent 14 years
U.S. Cl. D12—142

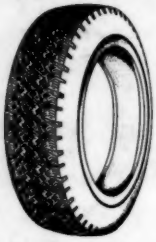


288,189
AUTOMOBILE TIRE
Masaharu Ono, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Dec. 20, 1984, Ser. No. 684,259
Claims priority, application Japan, Oct. 23, 1984, 59-43933
Term of patent 14 years
U.S. Cl. D12—146

288,190
AUTOMOBILE TIRE
Toshio Hayakawa, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed May 30, 1984, Ser. No. 615,490
Claims priority, application Japan, Nov. 30, 1983, 58-51634
Term of patent 14 years
U.S. Cl. D12—147

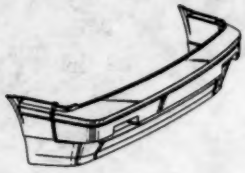
288,191
MOTORCYCLE TIRE
Masao Nakagawa, and Toshio Hayakawa, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Sep. 17, 1984, Ser. No. 651,129
Claims priority, application Japan, Mar. 29, 1984, 59-11927
Term of patent 14 years
U.S. Cl. D12—147

288,192
AUTOMOBILE TIRE
Akihiro Nakatani, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Aug. 14, 1984, Ser. No. 640,777
Claims priority, application Japan, Feb. 28, 1984, 59-7375
Term of patent 14 years
U.S. Cl. D12—147

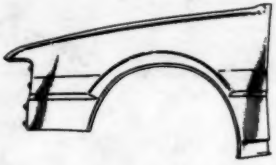


288,193
AUTOMOBILE CARRIAGE RACK
Frederic J. Caron, 7021 Shady La., Placerville, Calif. 95667
Filed Sep. 17, 1984, Ser. No. 651,831
Term of patent 14 years
U.S. Cl. D12—157

288,194
FRONT BUMPER
Tadao Okumura, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed May 3, 1984, Ser. No. 606,680
Term of patent 14 years
U.S. Cl. D12—169

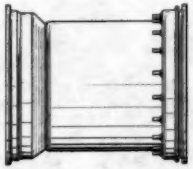


288,195
LEFT FRONT FENDER FOR AN AUTOMOBILE
Björn E. A. Envall, Vänersborg, Sweden, and Giorgetto Giugiaro, Turin, Italy, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,949
Claims priority, application Sweden, Oct. 26, 1983, 83-2773
Term of patent 14 years
U.S. Cl. D12—184

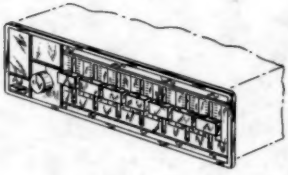


288,196
MOTORCYCLE TIRE
Kazushige Ikeda, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jan. 3, 1985, Ser. No. 688,626
Claims priority, application Japan, Oct. 17, 1984, 59-43131
Term of patent 14 years
U.S. Cl. D12—147

288,197
RACING WHEEL
Richard A. Goudy, Rte. 1, El Pomar, Templeton, Calif. 93465
Filed Jan. 14, 1983, Ser. No. 457,976
Term of patent 14 years
U.S. Cl. D12—210

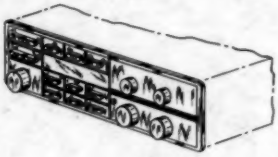


288,198
GRAPHIC EQUALIZER
John Stoddard, and Clive Grinyer, both of London, England, assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 30, 1984, Ser. No. 636,045
Term of patent 14 years
U.S. Cl. D14—1

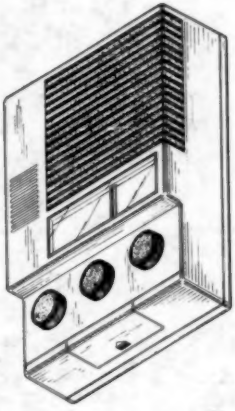


288,199
RADIO RECEIVER
John Stoddard, and Clive Grinyer, both of London, England, assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 30, 1984, Ser. No. 636,047
Term of patent 14 years
U.S. Cl. D14—68

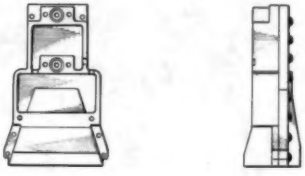
288,200
RADIO RECEIVER
John Stoddard, and Clive Grinyer, both of London, England, assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 30, 1984, Ser. No. 636,049
Term of patent 14 years
U.S. Cl. D14—68



288,201
WATER RESISTANT PORTABLE RADIO
David Fink, Dix Hill, N.Y., assignor to Windsor Industries, Inc., Farmingdale, N.Y.
Filed Sep. 21, 1984, Ser. No. 652,718
Term of patent 14 years
U.S. Cl. D14—68



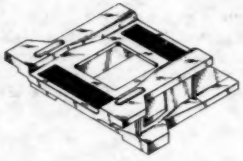
288,202
MICROWAVE RECEIVING ANTENNA
John F. Fuhrman; Paul K. Shumaker, both of Olathe, and Dennis A. Falls, Gardner, all of Kans., assignors to Maxcom Electronics, Inc., Kansas City, Mo.
Filed Nov. 5, 1984, Ser. No. 668,510
Term of patent 14 years
U.S. Cl. D14—86

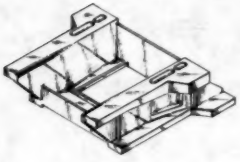


288,203
ELECTRONIC TELLER MACHINE
Kunio Akiyama, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 9, 1984, Ser. No. 670,476
Claims priority, application Japan, May 11, 1984, 59-19227
Term of patent 14 years
U.S. Cl. D14—106

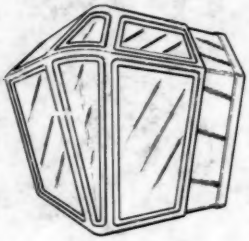
288,204
KEYBOARD FOR A PERSONAL COMPUTER
Thomas A. Anzelone, Ft. Lauderdale, and Willis Y. Jordan, III, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1984, Ser. No. 624,192
Term of patent 14 years
U.S. Cl. D14—100

288,205
OUTBOARD MOTOR MOUNTING BRACKET
Robert M. Bergeron, 27 Ball Ave., North Salem, N.H. 03073
Filed Jun. 28, 1984, Ser. No. 625,900
Term of patent 14 years
U.S. Cl. D15—4

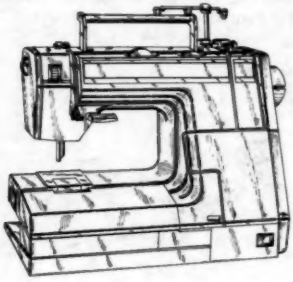




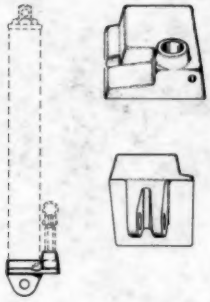
288,206
OPERATOR'S CAB FOR A CRANE
Jerry N. Moscovitch, Toronto, Canada, assignor to Engineered Design Inc., Toronto, Canada
Filed Dec. 19, 1984, Ser. No. 683,449
Claims priority, application Canada, Jul. 5, 1984, 05-07-84-8
Term of patent 14 years
U.S. Cl. D15—30



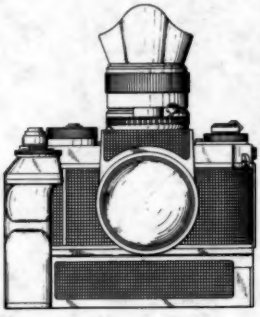
288,207
SEWING MACHINE
Nobufusa Kuroki, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1984, Ser. No. 571,521
Term of patent 14 years
U.S. Cl. D15—70



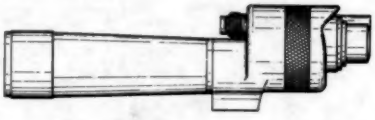
288,208
BASE BRACKET FOR COMBINED RAM HOUSING AND ACTUATOR
Joseph O. Hawkins, Rte. 7, Kensington Dr., Greenville, S.C. 29609
Filed Sep. 8, 1983, Ser. No. 530,415
Term of patent 14 years
U.S. Cl. D15—138



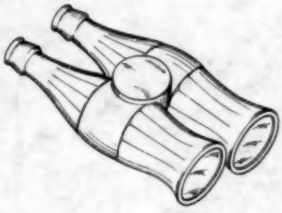
288,209
CAMERA
Sea C. Park, 3836 Birchwood, Skokie, Ill. 60076
Filed Dec. 7, 1984, Ser. No. 679,397
Claims priority, application Rep. of Korea, Jun. 23, 1984, 7428/1984
Term of patent 14 years
U.S. Cl. D16—9



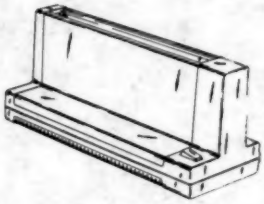
288,210
SPOTTING SCOPE
Minoru Mise, Asaka, Japan, assignor to Simmons Outdoor Corporation, Miami, Fla.
Filed Jul. 18, 1984, Ser. No. 631,157
Term of patent 14 years
U.S. Cl. D16—132



288,211
BINOCULAR
Bouziane Rabhi, 3, avenue Sacco & Vanzetti, 93420 Villepinte, France
Filed Nov. 13, 1984, Ser. No. 670,007
Claims priority, application France, Jun. 7, 1984, 84 2550
Term of patent 14 years
U.S. Cl. D16—133



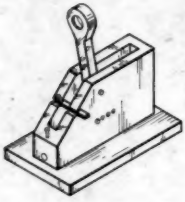
288,212
BINDING MACHINE
Hans P. Nordgren, Gustavsberg, Sweden, assignor to Semotex AB, Stockholm, Sweden
Filed Aug. 13, 1984, Ser. No. 640,361
Claims priority, application Sweden, Feb. 13, 1984, 84-0448
Term of patent 14 years
U.S. Cl. D18—34



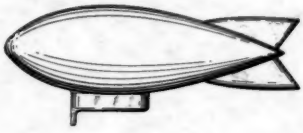
288,213
FOLDABLE, SELF-SUPPORTING, ADJUSTABLE BOOK HOLDER
Liborio D. Morales, c/o Gennette Pearson, 7 S. Alisos St., Santa Barbara, Calif. 93101
Filed Jun. 22, 1984, Ser. No. 623,250
Term of patent 14 years
U.S. Cl. D19—91

288,214
VERTICALLY EXTENDING DIVIDER FOR USE IN A FILING SYSTEM
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Aug. 12, 1982, Ser. No. 373,403
Term of patent 14 years
U.S. Cl. D19—99

288,215
TOY CATAPULT
Roger Tami, 3403 Honeywood St., Eugene, Oreg. 97401-4654
Filed Jul. 23, 1984, Ser. No. 633,528
Term of patent 14 years
U.S. Cl. D21—2

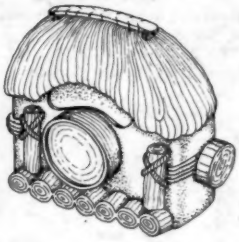


288,216
AIRSHIP TOY BALLOON
Fritz Jensen, Nordbovej 20 C, DK-9800 Hjorring, Denmark
Filed Feb. 13, 1984, Ser. No. 579,519
Term of patent 14 years
U.S. Cl. D21—84



288,217
BALANCING TOY
Ralph R. Torres, 2193 Laurelwood Dr., Thousand Oaks, Calif. 91362, and Clifford L. Rooke, 200 Clinton St., No. 1D, New York, N.Y. 11201
Filed Aug. 7, 1984, Ser. No. 638,731
Term of patent 14 years
U.S. Cl. D21—102

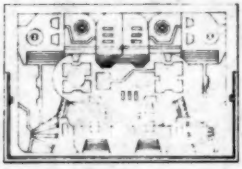
288,218
TOY RADIO
Rickie T. Bedell, Cincinnati, Ohio, and Kathryn A. Cavnar, Covington, Ky., assignors to Kenner Parker Toys Inc., Beverly, Mass.
Filed Jun. 15, 1984, Ser. No. 621,320
Term of patent 14 years
U.S. Cl. D21—113

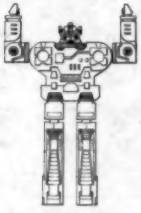


288,219
TOY RADIO
Rickie T. Bedell, and David Winslow, both of Cincinnati, Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Jun. 25, 1984, Ser. No. 624,483
Term of patent 14 years
U.S. Cl. D21—113

288,220
FIGURE TOY
Kuo-Shin Su, San-Chung, Taiwan, assignor to Chuan-Shing Mold Plastics & Toys Co., Ltd., San-Chung, Taiwan
Filed Aug. 28, 1984, Ser. No. 644,946
Term of patent 14 years
U.S. Cl. D21—149

288,221
COMBINED RECONFIGURABLE TOY CASSETTE AND BOX
Takashi Matsuda, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Dec. 2, 1983, Ser. No. 557,654
Claims priority, application Japan, Dec. 18, 1982, 57-191724
Term of patent 14 years
U.S. Cl. D21—150

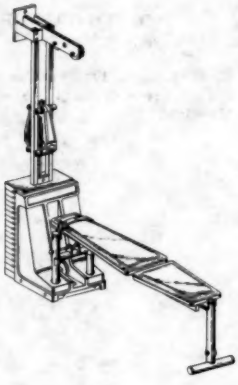




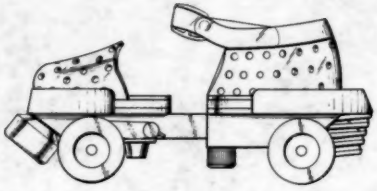
288,222
TOY KOALA BEAR
Akito Sato, Aichi, Japan, assignor to Pilot Ink Co., Ltd., Aichi, Japan
Filed Aug. 2, 1984, Ser. No. 637,180
Term of patent 14 years
U.S. Cl. D21—159

288,223
DOLL
Jeannie W. Nixon, 6448 Peggy Dr., Goshen, Ohio 45122
Filed Jun. 26, 1984, Ser. No. 624,700
Term of patent 14 years
U.S. Cl. D21—184

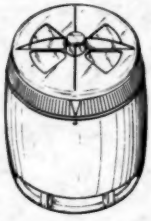
288,224
PHYSICAL EXERCISER
Gary L. Rockwell, LaGrange, Ga., assignor to Diversified Products Corporation, Opelika, Ala.
Filed Jun. 29, 1984, Ser. No. 626,118
Term of patent 14 years
U.S. Cl. D21—195



288,225
ROLLER SKATE
Reuben B. Klamer, Los Angeles, Calif., assignor to The Quaker Oats Company, Chicago, Ill.
Division of Ser. No. 547,648, Nov. 1, 1983. This application May 7, 1986, Ser. No. 862,423
Term of patent 14 years
U.S. Cl. D21—226



288,226
SWIMMING POOL CHEMICAL DISPENSER
Arlon G. Sangster, Sterling, Mass., and Alan H. Milford, Hamden, Conn., assignors to Olin Corporation, Cheshire, Conn.
Filed Dec. 11, 1984, Ser. No. 680,620
Term of patent 14 years
U.S. Cl. D23—3



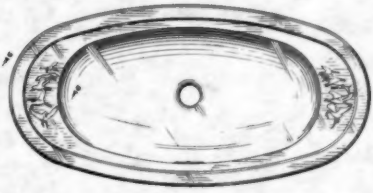
288,227
CHEMICAL FEEDER FOR SWIMMING POOLS
Ural M. Robinson, St. Louis, Mo., assignor to Heldor Industries, Inc., Morristown, N.J.
Filed Aug. 27, 1984, Ser. No. 644,630
Term of patent 14 years
U.S. Cl. D23—3

288,228
SINK SPRAYER HEAD
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Feb. 6, 1984, Ser. No. 577,059
Term of patent 14 years
U.S. Cl. D23—35

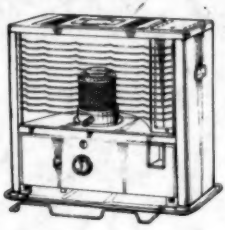
288,229
QUICK-CONNECTIVE COUPLING
Glenn I. Beal; Harry L. Hauger, and Rick Leer, all of Somerset, Pa., assignors to Gilmour Manufacturing Co., Somerset, Pa.
Filed Dec. 9, 1983, Ser. No. 559,972
Term of patent 14 years
U.S. Cl. D23—43

288,230
EAVESTROUGH DOWNSPOUT CONNECTOR
Kenneth C. Thatcher, 892 Colburn St., Toledo, Ohio 43609
Filed Dec. 27, 1983, Ser. No. 565,583
Term of patent 14 years
U.S. Cl. D23—43

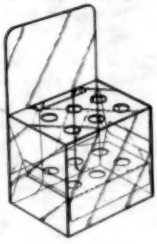
288,231
LAVATORY
Vance Smith, Brookfield, Vt., assignor to Crane Co., New York, N.Y.
Filed Jun. 27, 1984, Ser. No. 625,212
Term of patent 14 years
U.S. Cl. D23—58



288,232
STOVE
Kenzo Okamoto; Hideo Nishikawa; Koichi Sakai, and Fumihiko Kitada, all of Osaka, Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Japan
Filed Jan. 10, 1984, Ser. No. 569,600
Claims priority, application Japan, Nov. 18, 1983, 58-49813
Term of patent 14 years
U.S. Cl. D23—122



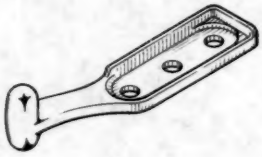
288,233
CONTAINER FOR A SHADE GUIDE AND DENTAL SYRINGES
William J. Blatherwick, Hamilton Square; Leslie Hamilton, Trenton, and Robert D. Holewinski, Lakehurst, all of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Apr. 9, 1984, Ser. No. 597,889
Term of patent 14 years
U.S. Cl. D24—31



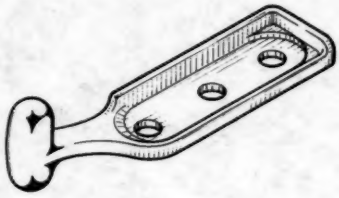
288,234
COMBINED CONTAINER AND DISPLAY CASE FOR DENTAL ARTICLES
William J. Blatherwick, Hamilton Square; Leslie Hamilton, Trenton, and Robert D. Holewinski, Lakehurst, all of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Oct. 29, 1984, Ser. No. 665,583
Term of patent 14 years
U.S. Cl. D24—31

288,235
THERAPEUTIC MITT
Thomas C. Hope, and Alexander D. Quintner, both of 26 Coonara Street, Holland Park, 4121, Queensland, Australia
Filed Jan. 6, 1983, Ser. No. 455,996
Term of patent 14 years
U.S. Cl. D24—36

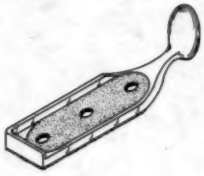
288,236
TEMPOROMANDIBULAR JOINT PROSTHESIS
Charles A. Homsy; John W. Tellkamp, both of Houston, Tex., and John N. Kent, Metairie, La., assignors to Vitek, Inc., Houston, Tex.
Filed Feb. 1, 1984, Ser. No. 575,953
The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—33



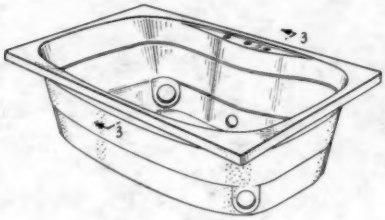
288,237
TEMPOROMANDIBULAR JOINT PROSTHESIS
Charles A. Homsy; John W. Tellkamp, both of Houston, Tex., and John N. Kent, Metairie, La., assignors to Vitek, Inc., Houston, Tex.
Filed Feb. 1, 1984, Ser. No. 575,954
The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—33



288,238
TEMPOROMANDIBULAR JOINT CONDYLAR PROSTHESIS
Charles A. Homsy; John W. Tellkamp, both of Houston, Tex., and John N. Kent, Metairie, La., assignors to Vitek, Inc., Houston, Tex.
Filed Apr. 30, 1985, Ser. No. 728,875
The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—33



288,239
WHIRLPOOL BATH TUB
Ralph D'Innocente, Walnut Creek, and Larry Drasin, Los Angeles, both of Calif., assignors to Jacuzzi Inc., Little Rock, Ark.
Filed Jul. 15, 1985, Ser. No. 754,467
The portion of the term of this patent subsequent to Nov. 11, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—38



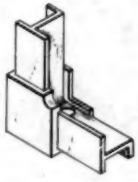
288,240
NEONATAL NATURAL NIPPLE
Ronald C. Fuller, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.
Filed Mar. 11, 1985, Ser. No. 710,751
The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—46

288,241
NEONATAL NATURAL NIPPLE
Ronald C. Fuller, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.
Filed Mar. 11, 1985, Ser. No. 710,770
The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—46

288,242
SURGICAL SUCTION INSTRUMENT
Rainer Govenius, Nastola, Finland, assignor to Mediman Oy, Finland
Filed Mar. 20, 1984, Ser. No. 591,447
Claims priority, application Finland, Sep. 21, 1983, 814/83
Term of patent 14 years
U.S. Cl. D24—51

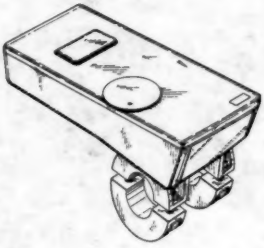
288,243
DOOR
Arthur M. Tofani, 2092 Harts La., Conshohocken, Pa. 19028
Filed Aug. 17, 1984, Ser. No. 641,685
Term of patent 14 years
U.S. Cl. D25—48

288,244
CORNER JOINT FOR PLASTIC WINDOWS
Dietrich F. Schmidt, Etters, Pa., assignor to Capitol Products Corporation, Mechanicsburg, Pa.
Filed Aug. 1, 1983, Ser. No. 519,290
Term of patent 14 years
U.S. Cl. D25—52



288,245
POWER FAILURE WARNING LIGHT
Thomas E. Corder, Danville, Calif., and Keith M. Mullins, Fort Collins, Colo., assignors to Intermatic Electronics Incorporated, Spring Grove, Ill.
Filed Jun. 11, 1984, Ser. No. 619,625
Term of patent 14 years
U.S. Cl. D26—26

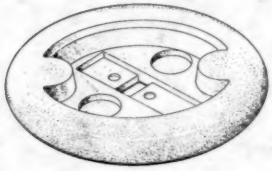
288,246
COMBINED BICYCLE HORN, RADIO AND LIGHT
Yuen K. Wing, Hong Kong, Hong Kong, assignor to Rattner Enterprises Limited, Hong Kong
Filed Sep. 10, 1984, Ser. No. 648,438
Claims priority, application United Kingdom, Mar. 12, 1984, 1018453; Aug. 6, 1984, 1021351
Term of patent 14 years
U.S. Cl. D26—34



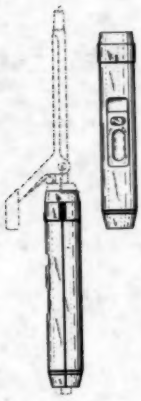
288,247
WALL LAMP
Michele De Lucchi, Milan, Italy, assignor to Artemide S.p.A., Pregnana Milanese, Italy
Filed Jan. 17, 1984, Ser. No. 571,412
Claims priority, application Italy, Jul. 27, 1983, 22517B/83
Term of patent 14 years
U.S. Cl. D26—85

288,248
TABLE LAMP
John A. A. Weaver, 55 Hamilton Ave., Jamestown, R.I. 02835
Filed Aug. 30, 1984, Ser. No. 645,610
Term of patent 14 years
U.S. Cl. D26—105

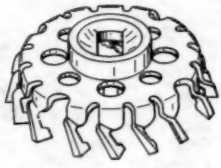
288,249
LAMP SHADE FOR WALL OR CEILING INDIRECT LIGHTING FIXTURE
Murray C. Pfister, San Francisco, Calif., assignor to Boyd Lighting Company, San Francisco, Calif.
Filed May 16, 1984, Ser. No. 610,975
Term of patent 14 years
U.S. Cl. D26—131



288,250
HANDLE FOR A BEAUTY CARE APPLIANCE OR THE LIKE
Duane D. Adams, Essex, Conn., assignor to North American Philips Corporation, New York, N.Y.
Filed Oct. 12, 1984, Ser. No. 660,604
Term of patent 14 years
U.S. Cl. D28—35

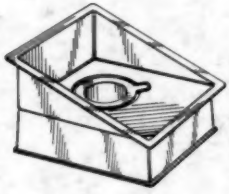


288,251
SHAVING CUTTER
Shunji Izumi, Matsumoto, Japan, assignor to Izumi Seimitsu Kogyo Kabushiki Kaisha, Matsumoto, Japan
Filed Jul. 19, 1984, Ser. No. 632,225
Term of patent 14 years
U.S. Cl. D28—45



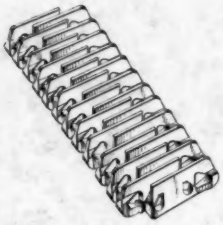
288,252
FIRE EXTINGUISHER VALVE
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Aurora, Ill.
Filed Nov. 28, 1984, Ser. No. 675,880
Term of patent 14 years
U.S. Cl. D29—5

288,253
CAT LITTER BOX
Rosanne Hatton, and Bud Wallace, both of 2601 E. Victoria Space 202, Rancho Dominguez, Calif. 90220
Filed Apr. 23, 1984, Ser. No. 602,715
Term of patent 14 years
U.S. Cl. D30—99

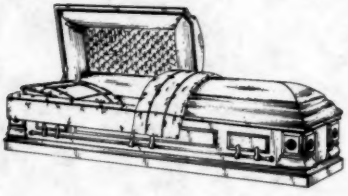


288,254
LOWER SUPPORT COLLAR FOR ARMS OF A COLLAPSIBLE CLOTHES DRIER
Ronald G. Meade, Edwardstown, Australia, assignor to Hills Industries Limited, Australia
Filed May 30, 1984, Ser. No. 615,205
Claims priority, application Australia, Nov. 30, 1983, 5849/83
Term of patent 14 years
U.S. Cl. D32—58

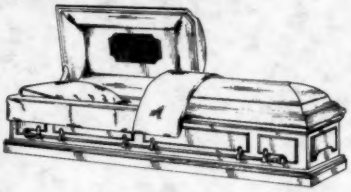
288,255
CLOSE RIB BELT MODULE FOR AN ENDLESS CONVEYOR BELT
Robert H. Bode, and William P. Hidden, both of Wenham, Mass., assignors to The Cambridge Wire Cloth Co., Cambridge, Md.
Filed Feb. 6, 1984, Ser. No. 577,362
Term of patent 14 years
U.S. Cl. D34—29



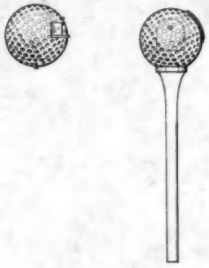
288,256
BURIAL CASKET
Michael L. Beardsley, Chittenango, N.Y., assignor to Marsellus Casket Co., Syracuse, N.Y.
Filed Jun. 29, 1984, Ser. No. 626,232
Term of patent 14 years
U.S. Cl. D99—7



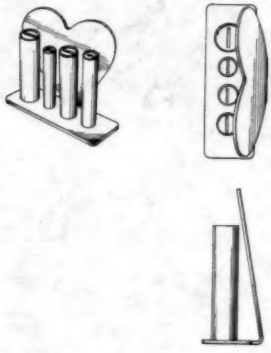
288,257
BURIAL CASKET
Michael L. Beardsley, Chittenango, N.Y., assignor to Marsellus Casket Co., Syracuse, N.Y.
Filed Sep. 24, 1984, Ser. No. 653,214
Term of patent 14 years
U.S. Cl. D99—7



288,258
MAIL BOX
Donald D. Oden, 1868 Arrowhead Ct., Greenfield, Ind. 46140
Filed May 4, 1984, Ser. No. 607,004
Term of patent 14 years
U.S. Cl. D99—30



288,259
COIN BANK
Precious E. Tranchida, 550 E. Earll, No. 38, Phoenix, Ariz. 85012
Filed Sep. 27, 1984, Ser. No. 655,069
Term of patent 14 years
U.S. Cl. D99—37



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF FEBRUARY, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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A. H. Robins Company, Incorporated: *See*—
Cale, Albert D., Jr., 4,642,343, Cl. 540-488.000.
Shanklin, James R., Jr., 4,642,348, Cl. 546-216.000.

A. M. Cousin & Cie: *See*—
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A/S Kongsberg Vapenfabrikk: *See*—
Mowill, R. Jan, 4,641,495, Cl. 60-39.161.

A/S Tomra Systems: *See*—
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Aagano, Toshitaka; and Takasaki, Yoshimi, to Fuji Photo Film Co., Ltd. Method of correcting radiation image read-out error. 4,642,462, Cl. 250-327.200.

Aaltonen, Olavi A.: *See*—
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AB Bonnierforetagen: *See*—
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AB Siba-Verken: *See*—
Andersson, Karl G., deceased; and Paulsson, Bengt, 4,641,464, Cl. 52-16.000.

AB Volvo: *See*—
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Abatemarco, Michael R. Razor blade cartridge unit with dual blades. 4,641,429, Cl. 30-41.000.

Abe, Mikio, to Alps Electric Co., Ltd. Variable porcelain condenser structure. 4,642,729, Cl. 361-293.000.

Abel, Stephen G.: *See*—
Green, C. Brad; Dobson, William; and Abel, Stephen G., 4,641,405, Cl. 29-157.10R.

Abeles, Benjamin: *See*—
Tiedje, Thomas J.; and Abeles, Benjamin, 4,642,144, Cl. 148-175.000.

Abt, Nancy G. Therapeutic cooling wrap. 4,641,655, Cl. 128-380.000.

ACF Industries, Incorporated: *See*—
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Achtnig, Peter; and Hegner, Gunter, to Krone GmbH. A heat protection device for overvoltage arrester magazines. 4,642,723, Cl. 361-124.000.

Acs, Maria; Faigl, Ferenc; and Fogassy, Elemer, to Alkaloida Vegyeszeti Gyar. Diastereomer salts of phenylalanine and N-acyl derivatives thereof and process for the separation of optically active phenylalanine and N-acyl derivatives thereof. 4,642,205, Cl. 260-501.170.

Adachi, Hideki: *See*—
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.

Adams, Priscilla L.; and Farcasiu, Malvina, to Mobil Oil Corporation. Catalytic dewaxing process. 4,642,176, Cl. 208-111.000.

Adams-Russell: *See*—
Fowler, Wayne D., 4,642,586, Cl. 333-122.000.

Adler, Robert, to Zenith Electronics Corporation. Touch control system for use with or having a three-dimensionally curved touch surface. 4,642,423, Cl. 178-18.000.

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Advance Transformer Company: *See*—
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Advanced Cardiovascular Systems, Inc.: *See*—
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Advanced Micro Devices, Inc.: *See*—
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Aerospatiale Societe Nationale Industrielle: *See*—
Bard, Max; Sibilo, Gerard; Marello, Georges; Viale, Daniel; and Louis, Michel, 4,641,985, Cl. 403-16.000.

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Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, 4,642,685, Cl. 358-84.000.

Agence Spatiale Europeenne: *See*—
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Agfa-Gevaert AG: *See*—
Muller, Jurgen; Kastl, Alfons; and Farber, Heinrich, 4,641,940, Cl. 354-322.000.

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AGIP, S.p.A.: *See*—
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Aguro, Yoshinori: *See*—
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Ahmann, John E., to Election Supplies Limited. Punching stylus for handicapped users. 4,642,450, Cl. 235-50.00R.

Aichi Steel Works, Ltd.: *See*—
Takata, Yatsuka; Yamada, Tadamasa; and Kikuchi, Eiki, 4,642,219, Cl. 420-104.000.

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Aitken, Edward J.: *See*—
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Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, to Hitachi, Ltd. Method of bonding copper and resin. 4,642,161, Cl. 156-630.000.

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Albert Einstein College of Medicine of Yeshiva University, a division of Yeshiva University: *See*—
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Aldrich, Roger L.; Bodett, Peter C.; and Kelly, Richard E., to Duo-Therm Corporation, The. Roof mount air conditioner. 4,641,502, Cl. 62-244.000.

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Andersson, Karl G., deceased (by Berglund, Marianne, heir); and Paulsson, Bengt, to AB Siba-Verken. Downpipe. 4,641,464, Cl. 52-16.000.
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, to Sumitomo Metal Industries, Ltd.; and Hitachi Shipbuilding & Engineering Company Limited. Method for cooling blast furnace gas in an heat recovery system. 4,642,127, Cl. 55-20.000.
Andreas, David W.: *See—*
Cox, David H.; Andreas, David W.; and Watkins, James D., 4,642,434, Cl. 219-10.55E.
Andreas Stihl: *See—*
Krebs, Gerhard, 4,641,614, Cl. 123-185.0BA.
Andreasson, Jan, to Skandiafabriken AB. Liquid level gauge. 4,641,523, Cl. 73-313.000.
Andrevski, Zygmunt M., to RCA Corporation. Lens-to-prism mounting structure. 4,642,692, Cl. 358-229.000.
Andrew Corporation: *See—*
Saad, Saad M., 4,642,585, Cl. 333-21.00R.
Andry, Gordon J., to Fabricated Steel Products, division of Indal Limited. Damping structure. 4,641,732, Cl. 188-379.000.
Anger, Byron H.: *See—*
Takeuchi, Seiji; and Anger, Byron H., 4,641,760, Cl. 220-1.00B.
Angstrom Robotics & Technologies, Inc.: *See—*
Hopkins, F. Kenneth, 4,642,526, Cl. 315-244.000.
Anhalt, John W.; and Cabourne, Michael K., to International Telephone and Telegraph Corporation. Insulation displacement connector. 4,641,903, Cl. 339-99.00R.
Anicon, Inc.: *See—*
Learn, Arthur J.; and DuBois, Dale R., 4,641,604, Cl. 118-728.000.
Anken, Milton: *See—*
Halbert, Seymour P.; and Anken, Milton, 4,642,285, Cl. 435-7.000.
Anker, Herbert: *See—*
Poliak, John M.; and Anker, Herbert, 4,641,905, Cl. 339-103.00B.
Anritsu Corporation: *See—*
Nakatsugawa, Kenji; Katayama, Aiichi; Sekiya, Hitoshi; and Hiratsuka, Shoji, 4,642,519, Cl. 315-1.000.
Antos, John M.: *See—*
Sargent, Charles L.; Antos, John M.; Hoffman, John A.; and Cameron, John T., 4,641,383, Cl. 4-323.000.
Aotani, Yoshimasa: *See—*
Takahashi, Hiroshi; Narutomi, Yasuhisa; Aotani, Yoshimasa; and Shiba, Keisuke, 4,642,283, Cl. 430-303.000.
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, to Nippon Shinyaku Co., Ltd. 1-phenoxy-3-(4-phenylpiperidino)-2-propand having both alpha- and beta-adrenergic action. 4,642,307, Cl. 514-252.000.
Aoyama, Taro; and Oshima, Yujiro, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Direct injection type internal combustion engine. 4,641,617, Cl. 123-262.000.
Apco Graphics, Inc.: *See—*
Cobb, Ronald W.; Lollis, Charles A.; and Crane, Nancy S., 4,641,448, Cl. 40-606.000.
Applied Energy, Inc.: *See—*
Klinger, Barney, 4,641,710, Cl. 166-303.000.
Aprica Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,641,879, Cl. 296-78.00A.
Arabella Limited: *See—*
Boyle, Michael, 4,641,465, Cl. 52-127.100.
Arad, Avi: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi, 4,642,066, Cl. 446-420.000.
Arai, Ryuichi: *See—*
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.
Toganoh, Shigeo; and Arai, Ryuichi, 4,642,654, Cl. 346-1.100.
Arakawa, Hiromichi: *See—*
Kobayashi, Toshiaki; Arakawa, Hiromichi; and Ohira, Tatsuo, 4,642,324, Cl. 524-559.000.
Arakawa, Junichi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,642,658, Cl. 346-76.0PH.
Araki, Yoshihiko: *See—*
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,642,325, Cl. 525-65.000.

Arana, Jorge E.: *See—*
Villavicencio, Eduardo J.; and Arana, Jorge E., 4,641,792, Cl. 241-74.000.
Araya, Hiroyuki: *See—*
Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.
Archibald, James B.; and Rink, Frederick J., Jr., to General Electric Company. Internal common neutral bus in large three-phase generator. 4,642,498, Cl. 310-71.000.
Ardco, Inc.: *See—*
Niekrasz, Francis M.; Kasper, Melvin C.; and Bockwinkel, Gerald J., 4,641,461, Cl. 49-404.000.
Armco, Inc.: *See—*
Debarbieri, Franco; Montorsi, Roberto; and Zaramella, Giancarlo, 4,642,752, Cl. 364-167.000.
Armonier, Ulrich: *See—*
Klein, Hans-Christof; Armonier, Ulrich; Oesterle, Hermann; and Jendroska, Juergen, 4,641,519, Cl. 73-129.000.
Arnaud, Jean-Claude; and Bore, Pierre, to L'Oreal. Process for evaluating the state of the surface of keratinous fibres and a composition for making use of this process. 4,642,294, Cl. 436-5.000.
Arnaudeau, Marcel; and Rousset, Philippe, to Institute Francais du Petrole. Feed device for a two-phase fluid pump and a hydrocarbon producing installation with such feed device. 4,641,679, Cl. 137-88.000.
Arnaudet, Lucile; and Folcher, Gerard, to Commissariat a l'Energie Atomique. Novel uranium compounds, their preparation process and their use as catalysts for the hydrogenation of unsaturated organic compounds. 4,642,337, Cl. 534-11.000.
Arney, Donald B. Personnel rescue apparatus for use on water. 4,642,061, Cl. 441-83.000.
Arnone, Ronald; and Ferguson, Keith, to E. R. Squibb & Sons, Inc. Adapter for use with two piece ostomy system. 4,642,107, Cl. 604-342.000.
Arvanitis, Aristotelis S., to Motorola, Inc. Laser trimming monolithic crystal filters to frequency. 4,642,505, Cl. 310-312.000.
Arzouman, Harry H., to Safe-T-Jack. Dual automobile jack for consumer use. 4,641,813, Cl. 254-8.00B.
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Uriuhara, Makoto, to Fujitsu Limited. Diagnostic processing system for automatic transmission of an automobile. 4,642,771, Cl. 364-424.100.
Asai, Takeji: *See—*
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.
Asakawa, Kenichi; Shirasaki, Yuichi; and Iwamoto, Yoshinao, to Kokusai Denshindenwa Co., Ltd. Rotary joint for optical fibers. 4,641,915, Cl. 350-96.180.
Asakura, Osamu, to Canon Kabushiki Kaisha. Recorder. 4,642,657, Cl. 346-76.0PH.
ASEA Aktiebolag: *See—*
Burstrom, Martin; and Tegman, Ragnar, 4,642,204, Cl. 252-633.000.
Ashizawa, Masaaki: *See—*
Morita, Shigetoshi; Ashizawa, Masaaki; and Yamada, Hirohide, 4,642,719, Cl. 360-126.000.
Ashok, Sankaranarayanan; and Breedis, John F., to Olin Corporation. Alpha copper base alloy adapted to be formed as a semi-solid metal slurry. 4,642,146, Cl. 148-414.000.
Associated Concrete Products: *See—*
Hahne, Walter B., 4,641,993, Cl. 404-4.000.
Associated Enterprises, Inc.: *See—*
Hartman, John E.; and Venaleck, John T., 4,641,426, Cl. 29-839.000.
AT&T Bell Laboratories: *See—*
Beckner, Mark W.; and Starr, Thomas J. J., 4,642,630, Cl. 340-825.500.
Glass, Alastair M., 4,642,799, Cl. 365-114.000.
Glodis, Paul F.; and Lenhan, Terrence A., 4,641,917, Cl. 350-96.330.
Hinch, Mark G., 4,642,755, Cl. 364-200.000.
Lee, Kuo-Hua, 4,641,420, Cl. 29-511.000.
Striny, Kurt M., 4,642,670, Cl. 357-68.000.
Teng, Albert Y., 4,642,758, Cl. 364-200.000.
Unger, Burton A., 4,642,728, Cl. 361-213.000.
AT&T Information Systems, Inc.: *See—*
Illuzzi, Vincent A.; Kutzavitch, Walter G.; and Rooney, Allen J., III, 4,642,550, Cl. 323-222.000.
McNair, Bruce E., 4,642,424, Cl. 380-48.000.
Atel Corporation: *See—*
Martinez, Antonio, Jr., 4,642,603, Cl. 340-52.00B.
Ateliers de Constructions Mecaniques de Vevey S.A.: *See—*
Dalliard, Fernand, 4,641,587, Cl. 105-3.000.
Athena Controls Inc: *See—*
Metz, Bruce E., 4,641,482, Cl. 53-388.000.
Atlantic Richfield Company: *See—*
Hansen, Gerald D.; and Biber, Joseph N., 4,642,221, Cl. 422-16.000.
Hill, Robert C., 4,642,191, Cl. 210-532.100.
Atochem: *See—*
Cheminal, Bernard; Mathais, Henri; and Thomarat, Marc, 4,642,386, Cl. 568-405.000.
Attal, Jacques; and Cambon, Gaston, to Centre National de la Recherche Scientifique. Acoustic microscope for analyzing an object in depth having aspherical lenses. 4,641,530, Cl. 73-606.000.
Aucoin, Daniel A., to Dow Chemical Company, The. Fail-safe electrical-ground indicator. 4,642,554, Cl. 324-51.000.
Auslander, Marc A.; Hopkins, Martin E.; and Markstein, Peter W., to International Business Machines Corporation. Method of developing formal identities and program bases in an optimizing compiler. 4,642,764, Cl. 364-300.000.
AVA International Corporation: *See—*
Akkerman, Neil H., 4,641,707, Cl. 166-116.000.
Avdel Limited: *See—*
Bradley, William D.; Alvi, Zia R.; and Lacey, Raymond D., 4,642,010, Cl. 411-69.000.
Awano, Mitsuru: *See—*
Minami, Kazuo; and Awano, Mitsuru, 4,642,571, Cl. 328-59.000.
Awnings Unlimited, Inc.: *See—*
Martensson, Olof, IV, 4,641,805, Cl. 248-273.000.
Aycock, David F.; and Ting, Sai-Pei, to General Electric Company. Acyl modified polyphenylene ether composition. 4,642,358, Cl. 549-245.000.
Ayers, Robert C. Wheelchair with rocking seat assembly. 4,641,848, Cl. 280-242.0WC.
B.A.T. Cigarettenfabriken GmbH: *See—*
Schmekel, Gerald; and Rudolph, Gert, 4,641,667, Cl. 131-352.000.
B. F. Goodrich Company, The: *See—*
Cowfer, Joseph A.; and Best, James E., 4,642,400, Cl. 570-238.000.
Hodge, Ian M., 4,642,331, Cl. 528-492.000.
B & H Manufacturing Company: *See—*
Hoffmann, Wolfgang, 4,641,558, Cl. 83-152.000.
Baba, Takesi: *See—*
Matsuoka, Kazuhiko; Usui, Masayuki; Minoura, Kazuo; Baba, Takesi; and Someya, Atsushi, 4,641,920, Cl. 350-173.000.
Baba, Yuko: *See—*
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,641,890, Cl. 301-37.0SS.
Bacharach, Inc.: *See—*
Fruhwald, John M., 4,642,172, Cl. 204-231.000.
Bacon, James I.: *See—*
Orsburn, Michael L.; Hemsky, Robert L.; and Bacon, James I., 4,642,682, Cl. 358-80.000.
Baer, Hanspeter, to Zellweger Uster, Ltd. Method for transmitting data via a line of an alternating current distribution network, and a transmitter for carrying out the method. 4,642,637, Cl. 340-870.190.
Baggen, Constant P. M. J., to U.S. Philips Corporation. Decoder for the decoding of code words which are blockwise protected against the occurrence of a plurality of symbol errors within a block by means of a reed-solomon code, and reading device for optically readable record carriers. 4,642,808, Cl. 371-39.000.
Bailey, Edward J., to Cincinnati Milacron Inc. Method for locating a precision robotic base component. 4,642,212, Cl. 264-262.000.
Baird Corporation: *See—*
Grandy, Mark E., 4,641,968, Cl. 356-313.000.
Baitz, Guenter; and Dobring, Wilfried, to Nixdorf Computer AG. Cashbox for a cash register. 4,642,449, Cl. 235-22.000.
Baker, John R. Methods of determining fructosamine levels in blood samples. 4,642,295, Cl. 436-87.000.
Baker Oil Tools, Inc.: *See—*
Harris, Gary L., 4,641,682, Cl. 137-329.040.
Vlasek, David J.; and Riddle, Harry W., 4,641,776, Cl. 228-155.000.
Balazs, Janos; Bocskor, Adam; Cseh, Otto; and Iring, Rezso, to Energiagazdalkodasi Intezet. Multistage evaporation boiling equipment. 4,641,607, Cl. 122-360.000.
Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. β-adrenergic blocking imidazolylphenoxy propanolamines. 4,642,311, Cl. 514-316.000.
Ball Corporation: *See—*
Smith, Eugene F.; and Nguyen, Tuan A., 4,641,761, Cl. 220-66.000.
Ballance, John W.: *See—*
Hewitt, Michael T. H.; Ballance, John W.; and Scott, Richard P. I., 4,642,806, Cl. 370-95.000.
Balomenos, Robert J. Adjustable drive belt. 4,642,081, Cl. 474-253.000.
Balzers Aktiengesellschaft: *See—*
Moll, Eberhard; Lardon, Marcel; and Muller, Edgar, 4,641,450, Cl. 42-76.020.
Banks, Adam J. Down rigger boom hinge. 4,641,395, Cl. 16-348.000.
Baralaba Pty. Limited: *See—*
Lampard, Robert D., 4,641,616, Cl. 123-256.000.
Barbarin, Remy: *See—*
Kerviel, Alain; and Barbarin, Remy, 4,642,496, Cl. 310-68.00B.
Bard, Max; Sibilo, Gerard; Marello, Georges; Viale, Daniel; and Louis, Michel, to Aerospatiale Societe Nationale Industrielle. Temporary edge to edge securement in space of two parts. 4,641,985, Cl. 403-16.000.
Barker, Melanie: *See—*
Hibberd, Kenneth A.; Anderson, Paul C.; and Barker, Melanie, 4,642,411, Cl. 800-1.000.
Barmag Barmer Maschinenfabrik AG: *See—*
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,641,504, Cl. 68-5.00E.
Barnett, Ronald E.; and Yarger, Ronald G., to General Foods Corporation. Foodstuffs containing 3-aminobenzesulfonic acid as a sweetener inhibitor. 4,642,240, Cl. 426-538.000.
Barrack Technology: *See—*
Lampard, Robert D., 4,641,616, Cl. 123-256.000.
Bartsch, Wolfgang: *See—*
Michel, Helmut; Marzenell, Klaus; Kampe, Wolfgang; Bartsch, Wolfgang; and Schaumann, Wolfgang, 4,642,309, Cl. 514-269.000.

BASF Aktiengesellschaft: *See—*
Elbs, Peter; Jeserich, Wolfgang-Dieter; and Wehr, Rudolf, 4,642,211, Cl. 264-85.000.
Hofmeister, Peter; Burstinghaus, Rainer; and Adolphi, Heinrich, 4,642,368, Cl. 560-65.000.
Schirmer, Ulrich; Plath, Peter; Sauter, Hubert; and Wuerzer, Bruno, 4,642,132, Cl. 71-90.000.
Basic Measuring Instruments: *See—*
McEachern, Alexander; and Terry, Steve, 4,642,563, Cl. 324-111.000.
Batchelor, Ronnie K.; and Rowe, Ronnie R. Master keyboard. 4,641,509, Cl. 70-388.000.
Batchman, Theodore E.; and Gimpelson, George E., to Univ. of Virginia Alumni Patents Found. Miniature electromagnetic field measurement probe. 4,642,558, Cl. 324-72.500.
Bates, Robert N., to U.S. Philips Corporation. Injection-locked waveguide oscillator. 4,642,577, Cl. 331-47.000.
Batjer, John D.; Eades, Lindsay R.; Liedtke, Raymond J.; and Zebelman, Arthur M., to LabAdapt, Inc. Washer for disposable cuvette rotors. 4,641,674, Cl. 134-138.000.
Bauer, Karl: *See—*
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,641,504, Cl. 68-5.00E.
Baugh, Benton F. Underwater connection apparatus. 4,641,998, Cl. 405-169.000.
Bauman, Douglas A.: *See—*
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.
Baumberger, Werner. Construction element. 4,641,470, Cl. 52-309.170.
Bayer Aktiengesellschaft: *See—*
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,642,310, Cl. 514-301.000.
Hajek, Manfred; Salzburg, Herbert; and Ziemann, Heinz, 4,642,344, Cl. 544-196.000.
Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.
BBC Brown, Boveri & Company, Limited: *See—*
Brem, Ernst, 4,642,499, Cl. 310-89.000.
Heiniger, Peter; Masek, Jaroslav; and Serin, Herbert, 4,642,025, Cl. 415-139.000.
Roggwiller, Peter; and Sittig, Roland, 4,642,669, Cl. 357-52.000.
BBL Industries, Inc.: *See—*
Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, 4,642,425, Cl. 379-57.000.
Beamenderfer, Robert E.: *See—*
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,641,907, Cl. 339-147.00R.
Beck, Andrew C.; and Beck, Shirley E. Method and apparatus for stabilizing a ladder. 4,641,729, Cl. 182-172.000.
Beck, John C.; and Dobberpuhl, Daniel W., to Digital Equipment Corporation. Multiple phase clock buffer module with non-saturated pull-up transistor to avoid hot electron effects. 4,642,492, Cl. 307-578.000.
Beck, Shirley E.: *See—*
Beck, Andrew C.; and Beck, Shirley E., 4,641,729, Cl. 182-172.000.
Beckner, Mark W.; and Starr, Thomas J. J., to AT&T Bell Laboratories. Method and apparatus for bus contention resolution. 4,642,630, Cl. 340-825.500.
Becton, Dickinson and Company: *See—*
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., 4,642,242, Cl. 427-2.000.
Bedard, James F.: *See—*
Thomas, Charles E.; Lee, Minyoung; Bedard, James F.; and Hayashi, Steven R., 4,642,617, Cl. 340-680.000.
Beeck, Carlos L., to Tektronix, Inc. Grounding and supporting metal mesh. 4,642,592, Cl. 333-246.000.
Beedle, Edward E.; and Robertson, David W., to Eli Lilly and Company. Intermediates for anticonvulsant agents. 4,642,379, Cl. 564-155.000.
Been, Thomas S., to Process and Cryongenic Services, Inc. Waste solvent receptacle. 4,641,680, Cl. 137-312.000.
Beer, Wilhelm, to General Motors Corporation. Motor vehicle engine mounting arrangement. 4,641,809, Cl. 248-559.000.
Beers, Irene G.: *See—*
Vetanen, William A.; Gleason, Kimberly R.; and Beers, Irene G., 4,642,259, Cl. 428-137.000.
Behan, Diane E., to Taylor, Sheryl L., a part interest. Device for securing respiratory appliance during respiratory therapy. 4,641,647, Cl. 128-207.180.
Behr-Thomson Dehnstoffregler GmbH: *See—*
Saur, Roland, 4,642,599, Cl. 337-397.000.
Beisler GmbH: *See—*
van der Weide, Egbert J., 4,641,826, Cl. 271-18.300.
Belart, Juan, to Alfred Teves GmbH. Hydraulic servo vehicle brake. 4,641,891, Cl. 303-10.000.
Belart, Juan, to Alfred Teves GmbH. Brake system. 4,641,894, Cl. 303-114.000.
Belart, Juan; Burgdorf, Jochen; Bleckmann, Hans W.; Weise, Lutz; and Seibert, Wolfram, to ITT Industries Inc. Brake system with slip control for automotive vehicles. 4,641,895, Cl. 303-119.000.
Bele, Robert, to CGR Ultrasonic. Echography probe and apparatus incorporating such a probe. 4,641,660, Cl. 128-660.000.
Bell Communications Research, Inc.: *See—*
Personick, Stewart D., 4,642,804, Cl. 370-3.000.
Bell, Robert K.: *See—*
Hodsdon, Roy F.; and Bell, Robert K., 4,642,735, Cl. 361-424.000.
Bell, William H.: *See—*
Lynch, David D., Jr.; and Bell, William H., 4,641,801, Cl. 244-3.140.
Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, to Elektroschmelzwerk Kempten GmbH. Process for treating cast iron melts with silicon carbide. 4,642,135, Cl. 420-33.000.
Beneking, Heinz, to Telefunken electronic GmbH. Optical adjusting process. 4,641,921, Cl. 350-320.000.
Bengtsson, Ulf A., to Santrade Limited. Rotary drill bit. 4,641,718, Cl. 175-331.000.
Benjamin, James A.: *See—*
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Bennett, Barbara E., personal representative: *See—*
Bennett, David E., deceased; and Bennett, Barbara E., personal representative, 4,641,388, Cl. 14-71.700.
Bennett, Clay, to Alco Foodservice Equipment Company. Beverage dispenser with automatic cup-filling control. 4,641,692, Cl. 141-95.000.
Bennett, David E., deceased; and by Bennett, Barbara E., personal representative, to Kelley Company, Inc. Hydraulic control system for a dockboard. 4,641,388, Cl. 14-71.700.
Bennett, Wilfred P. Push-pull radio frequency circuit with integral transistion to waveguide output. 4,642,578, Cl. 331-100.000.
Beresford, H. Richard: *See—*
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240.000.
Berg, Lloyd; and Yeh, An-I. Dehydration of formic acid by extractive distillation. 4,642,166, Cl. 203-15.000.
Berg, Lloyd; and Yeh, An-I. Separation of isobutyl acetate from isobutanol by extractive distillation. 4,642,167, Cl. 203-60.000.
Berger, Joseph, to Ciba-Geigy Corporation. Photocrosslinkable polymers having thioetherimidyl side groups. 4,642,353, Cl. 548-431.000.
Berglund, Marianne, heir: *See—*
Andersson, Karl G., deceased; and Paulsson, Bengt, 4,641,464, Cl. 52-16.000.
Bergman, Charles T., to General Electric Company. Cradle drive and release mechanism for use with a magnetic resonance scanner. 4,641,823, Cl. 269-322.000.
Berkley and Company, Inc.: *See—*
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,641,860, Cl. 285-38.000.
Bernstein, Irwin B., to R. R. Donnelley & Sons Company. Printing fountain solution. 4,641,579, Cl. 101-451.000.
Berridge, Jack A., to Berridge Manufacturing Co. Moisture resistant seam assembly. 4,641,475, Cl. 52-584.000.
Berridge Manufacturing Co.: *See—*
Berridge, Jack A., 4,641,475, Cl. 52-584.000.
Berthiez-Saint-Etienne: *See—*
Charra, Jean-Pierre, 4,641,415, Cl. 29-568.000.
Bertrand, Jean-Jacques, to Pomagalski, S.A. Electrically driven detachable gondola lift or chair lift. 4,641,584, Cl. 104-173.200.
Best, James E.: *See—*
Cowfer, Joseph A.; and Best, James E., 4,642,400, Cl. 570-238.000.
Betancourt, Walter J.: *See—*
Bohmer, William; Betancourt, Walter J.; and Hoffman, Louis S., 4,641,923, Cl. 350-335.000.
Betteridge, Peter R., to Shell Oil Company. Process for cell disruption. 4,642,289, Cl. 435-101.000.
Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinckney, Warren J.; and Wilson, Alan D., to International Business Machines Corporation. Workpiece mounting and clamping system having submicron positioning repeatability. 4,642,438, Cl. 219-121.00L.
Bianco, Eric L. Key deburring and polishing assembly. 4,641,463, Cl. 51-7.000.
Biber, Joseph N.: *See—*
Hansen, Gerald D.; and Biber, Joseph N., 4,642,221, Cl. 422-16.000.
Bielinski, Ralph F.; Jaeschke, James R.; Krstic, Slobodan; Piber, Earl T.; and Theisen, Peter J., to Eaton Corporation. Solid state hybrid switch. 4,642,481, Cl. 307-252.0UA.
Bier, Mark E., to American Sterilizer Company. Method of vaporizing multicomponent liquids. 4,642,165, Cl. 203-12.000.
Bierman, Larry W.: *See—*
Polinsky, Samuel M.; Bierman, Larry W.; and Hempel, David A., 4,642,181, Cl. 209-167.000.
Billen, Kurt: *See—*
Muller, Fernand; Wannborg, Nils A.; and Billen, Kurt, 4,641,629, Cl. 126-6.000.
Birkett, Harry. Canoe conversion kit. 4,641,594, Cl. 114-43.000.
Bischoff, Gilbert: *See—*
Boehm, Peter; Volz, Peter; Bischoff, Gilbert; Booten, Sigmund; Engert, Klaus; and Loew, Albin, 4,641,568, Cl. 91-369.00A.
Bitonti, Frank E., to AM General Corporation. Automated vehicle tire pressurization system. 4,641,698, Cl. 152-416.000.
Bjorkman, Rune, to Pharmacia AB. Apparatus for carrying out analysis. 4,642,220, Cl. 422-101.000.

Bjorshol, Kolbjorn. Apparatus for hooking and possibly baiting of a fishing line. 4,641,452, Cl. 43-4.000.

Black & Decker Inc.: *See*—
Overy, Colin, 4,641,762, Cl. 220-81.00R.

Blackbourn, Inc.: *See*—
Johnson, Breck J.; and Canfield, George D., 4,641,750, Cl. 206-387.000.

Blackburn, Tom L., to GTE Communication Systems Corporation. Apparatus for locating faults in a carrier subscriber communication system. 4,642,426, Cl. 370-13.100.

Blasius, Udo: *See*—
Rodi, Anto; and Blasius, Udo, 4,642,455, Cl. 250-221.000.

Bleckmann, Hans W.: *See*—
Belart, Juan; Burgdorf, Jochen; Bleckmann, Hans W.; Weise, Lutz; and Seibert, Wolfram, 4,641,895, Cl. 303-119.000.

Blevins, Gerald G.; Johnson, Fred, Jr.; Lentz, Frank R.; and Root, John P., to Boeing Company, The. Tooling for elastomeric swaging machine. 4,641,407, Cl. 29-237.000.

Bloch, Bertrand: *See*—
Ropars, Marcel; and Bloch, Bertrand, 4,642,264, Cl. 428-367.000.

Blom, C. James, to Roxor Corporation. Elimination of internal reflections and diffractions from junctures in, and at the periphery of, a segmented mirror. 4,641,933, Cl. 350-613.000.

Blomquist, James E.; and Wilczewski, Robert H. Dot matrix print head. 4,641,981, Cl. 400-124.000.

Blucher, William J.; Ernst, Richard J.; and Peterson, Francis C., to Illinois Tool Works Inc. Fastening assembly for roofs of soft material. 4,642,012, Cl. 411-371.000.

Blumenthal, Jack L.: *See*—
Burk, Maksymilian; and Blumenthal, Jack L., 4,642,125, Cl. 48-197.00R.

Bluvstein, Dale C. Control circuit to inhibit harmful transmission shifting. 4,641,722, Cl. 180-271.000.

Board of Regents, The University of Texas System, The: *See*—
Folkers, Karl; Jie-Cheng, Xu; and Bowers, Cyril Y., 4,642,332, Cl. 530-313.000.

Boardwalk Regency Corporation: *See*—
Patroni, Anthony F., 4,641,992, Cl. 403-382.000.

Boatwright, David A.: *See*—
Klapper, Kenneth K.; and Boatwright, David A., 4,641,408, Cl. 29-271.000.

Bockwinkel, Gerald J.: *See*—
Niekrasz, Francis M.; Kasper, Melvin C.; and Bockwinkel, Gerald J., 4,641,461, Cl. 49-404.000.

Bocskor, Adam: *See*—
Balazs, Janos; Bocskor, Adam; Cseh, Otto; and Iring, Rezso, 4,641,607, Cl. 122-360.000.

Bodett, Peter C.: *See*—
Aldrich, Roger L.; Bodett, Peter C.; and Kelly, Richard E., 4,641,502, Cl. 62-244.000.

Boebel, Manfred: *See*—
Hutterer, Frieder; Buess, Gerd; and Boebel, Manfred, 4,641,652, Cl. 128-334.00R.

Boehm, Peter; Volz, Peter; Bischoff, Gilbert; Booten, Sigmund; Engert, Klaus; and Loew, Albin, to Alfred Teves GmbH. Vacuum-operated brake power booster. 4,641,568, Cl. 91-369.00A.

Boehme, Georg: *See*—
Prescher, Guenter; Grund, Andreas; Petsch, Heinrich; and Boehme, Georg, 4,642,387, Cl. 568-446.000.

Boehringer Mannheim GmbH: *See*—
Michel, Helmut; Marzenell, Klaus; Kampe, Wolfgang; Bartsch, Wolfgang; and Schaumann, Wolfgang, 4,642,309, Cl. 514-269.000.

Boeing Company, The: *See*—
Blevins, Gerald G.; Johnson, Fred, Jr.; Lentz, Frank R.; and Root, John P., 4,641,407, Cl. 29-237.000.
Feifel, Winfried M., 4,641,796, Cl. 244-35.00R.
Lightfoot, Fred M., 4,642,649, Cl. 342-458.000.

Boge GmbH: *See*—
Lohr, Karl-Heinz; Kohberg, Ewald; Kuchheuser, Werner; and Dorhmann, Wolfgang, 4,641,872, Cl. 293-133.000.

Boharski, Robert. Mouse trap. 4,641,456, Cl. 43-73.000.

Bohmer, William; Betancourt, Walter J.; and Hoffman, Louis S., to Control Interface Company Limited. Field sensitive optical displays with electrodes with high and low impedance portions. 4,641,923, Cl. 350-335.000.

Boller, Edward, to Hydrovane Compress or Company Limited, The. Positive displacement air compressors. 4,642,033, Cl. 417-295.000.

Bom, Cornelis J. G.: *See*—
van der Lely, Edwin; and Bom, Cornelis J. G., 4,641,491, Cl. 56-228.000.

Bommart, Patrick T., to C. Delachaux. Apparatus for adjusting two butt-ends of rails to be connected by welding. 4,641,818, Cl. 269-43.000.

Bondy, Daniel A.; East, Judith A.; and Rizzo, Christina M., to St. Vincent Medical Center. Bed enclosure. 4,641,387, Cl. 5-508.000.

Booten, Sigmund: *See*—
Boehm, Peter; Volz, Peter; Bischoff, Gilbert; Booten, Sigmund; Engert, Klaus; and Loew, Albin, 4,641,568, Cl. 91-369.00A.

Bore, Pierre: *See*—
Arnaud, Jean-Claude; and Bore, Pierre, 4,642,294, Cl. 436-5.000.

Botez, Dan: *See*—
Connolly, John C.; and Botez, Dan, 4,642,143, Cl. 148-171.000.

Botton, Guilio. Toothed belt drive between oblique shafts. 4,642,071, Cl. 474-63.000.

Botvidsson, Lars, to Siemens Aktiengesellschaft. Endocardial electrode arrangement. 4,641,664, Cl. 128-785.000.

Boucher, James E., to Hudson Lock, Inc. Sliding bolt locking device. 4,641,506, Cl. 70-129.000.

Bouman, Anton J.; and Geertsema, Eise B., to U.S. Philips Corporation. High pressure discharge lamp. 4,642,520, Cl. 315-73.000.

Boutterin, Rene : *See*—
Dubuisson, Jacques; Le Gal, Pascal; and Boutterin, Rene , 4,641,425, Cl. 29-830.000.

Bowen, Paul D.: *See*—
Conley, John M.; and Bowen, Paul D., 4,641,673, Cl. 134-138.000.

Bowers, Cyril Y.: *See*—
Folkers, Karl; Jie-Cheng, Xu; and Bowers, Cyril Y., 4,642,332, Cl. 530-313.000.

Boyd, John H., Jr., to General Electric Company. Hermetic compressor unit and stationary assembly. 4,642,497, Cl. 310-68.00R.

Boyd, John H., Jr.; and Muller, Alexander, to General Electric Company. Control system for an electronically commutated motor, method of controlling such, method of controlling an electronically commutated motor and laundry apparatus. 4,642,536, Cl. 318-254.000.

Boyle, Michael, to Arabella Limited. Pool construction and panel support member. 4,641,465, Cl. 52-127.100.

Bozzolato, Giovanni, to AGIP, S.p.A. Method for the stereophotogrammetric survey of large-dimension objects on sea and land. 4,641,960, Cl. 356-2.000.

BP Chimie Societe Anonyme: *See*—
Morterol, Frederic; and Vidal, Jean L., 4,642,328, Cl. 526-125.000.

Braat, Josephus J. M., to U.S. Philips Corporation. Biaspherical lens. 4,641,929, Cl. 350-432.000.

Bradley, John J.; and Hansen, Debra K., to Paper Converting Machine Company. Method of making elastic diapers and product. 4,642,109, Cl. 604-385.00Z.

Bradley, William D.; Alvi, Zia R.; and Lacey, Raymond D., to Avdel Limited. Threaded fastener and method of installing same. 4,642,010, Cl. 411-69.000.

Brandes, Wilhelm: *See*—
Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.

Brandl, Erich, to Voest-Alpine Aktiengesellschaft. Cutting machine. 4,641,889, Cl. 299-75.000.

Braun, Hermann; Dumschat, Helmut; Strommer, Kurt; and Mueller, Sieghard, to L. Schuler GmbH. Intermediate storage in a transfer press. 4,641,515, Cl. 72-405.000.

Brauning, Egon, to Protoned B.V. Work chair having a vertically adjustable chair support. 4,641,885, Cl. 297-300.000.

Brazelton, Carl L., to Stranco, Inc. Polymer feed system. 4,642,222, Cl. 422-111.000.

Breedis, John F.: *See*—
Ashok, Sankaranarayanan; and Breedis, John F., 4,642,146, Cl. 148-414.000.

Breier, Thomas J.: *See*—
Martin, Robert H.; Rozelle, Bradley J.; and Breier, Thomas J., 4,641,804, Cl. 248-205.100.

Brelko (Proprietary) Limited: *See*—
Kerst, Gerrit; and Kerst, Hendrik, 4,641,852, Cl. 280-489.000.

Brem, Ernst, to BBC Brown, Boveri & Company, Limited. Casing means for electrical machine. 4,642,499, Cl. 310-89.000.

Bremen Associates Incorporated: *See*—
Clarke, William, 4,641,562, Cl. 83-837.000.

Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., to Stewart Stamping Corp. Printed circuit board jack for modular plug connector terminated cord. 4,641,901, Cl. 339-14.00R.

Brent Chemicals International PLC: *See*—
Hutchings, David J., 4,641,518, Cl. 73-104.000.

Bretaudeau, Francis; and Sarazin, Marc, to Office National d'Etudes et de Recherches Aerospatiales. Three-dimensional reflectors for object attitude recognition. 4,642,469, Cl. 250-561.000.

Bridgestone Corporation: *See*—
Nagano, Jun; and Tanaka, Shuichi, 4,642,686, Cl. 358-107.000.

Bridon plc: *See*—
Christian, Philip; and Tawse, Alan I., 4,641,689, Cl. 140-149.000.

Briosi, Gordon K.: *See*—
Weickert, Chris A.; and Briosi, Gordon K., 4,641,581, Cl. 102-307.000.

Bristol-Myers Company: *See*—
Kaneko, Takushi; Wong, Henry S. L.; and Doyle, Terrence W., 4,642,352, Cl. 548-422.000.
Kim, Choung U.; and Misco, Peter F., Jr., 4,642,341, Cl. 540-350.000.

British-American Tobacco Company Limited: *See*—
Hedge, Roger W.; and Brown, Ian C., 4,641,665, Cl. 131-296.000.

British Petroleum Company p.l.c., The: *See*—
Alper, Howard; Smith, David J. H.; and Woell, James B., 4,642,370, Cl. 560-100.000.
Hyde, Edward A.; and McNiff, Timothy K., 4,642,403, Cl. 585-415.000.
Lucy, Andrew R.; and Morris, George E., 4,642,374, Cl. 560-204.000.

British Telecommunications Public Limited Company: *See*—
Hewitt, Michael T. H.; Ballance, John W.; and Scott, Richard P. I., 4,642,806, Cl. 370-95.000.

Britten, Roy J., to California Institute of Technology. Avalanche counter and encoder system for counting and mapping radioactive specimens. 4,642,465, Cl. 250-389.000.

Broeils, John: *See*—
Landsberger, David; and Broeils, John, 4,641,384, Cl. 4-620.000.
Brosten, Goran, to Tetra Pak International Aktiebolag. Device for cutting a narrow strip of continuous articles for packaging. 4,641,481, Cl. 53-128.000.
Brother Industries, Ltd.: *See*—
Ishikawa, Yujiro, 4,642,472, Cl. 250-578.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Sawada, Akihiro, 4,642,779, Cl. 364-520.000.
Browen, Rodney: *See*—
Groves, William A.; Snook, Matthew L.; and Browen, Rodney, 4,642,561, Cl. 324-73.00R.
Brown, Christopher R.; and Roachsmith, Humphrey, to Westinghouse Brake and Signal Company Limited. Track circuit. 4,641,803, Cl. 246-34.0CT.
Brown, Ian C.: *See*—
Hedge, Roger W.; and Brown, Ian C., 4,641,665, Cl. 131-296.000.
Brown, Robert L. Unitary pants holder. 4,641,756. Cl. 211-89.000.
Brown, Victor K. Combination square. 4,641,435, Cl. 33-427.000.
Brown & Williamson Tobacco Corporation: *See*—
Lewis, Robert T.; and Tudor, Thomas T., 4,641,748, Cl. 206-263.000.
Brownell, David J.; Christensen, Daniel C.; Erie, David G.; and Youngner, Daniel, to Honeywell Inc. Planarization of dielectric layers in integrated circuits. 4,642,162, Cl. 156-643.000.
Bruce, Kenneth E., to Honeywell Information Systems Inc. Graphic display scan line blanking capability. 4,642,626, Cl. 340-750.000.
Brule, Jean C. R.: *See*—
Vigneron, Gerard G.; and Brule, Jean C. R., 4,641,556, Cl. 83-36.000.
Brunswick Corporation: *See*—
Frazzell, Michael E.; and Snyder, Richard H., 4,642,057, Cl. 440-52.000.
Brussee, Warren T.: *See*—
Lemmers, Robert E.; Safran, Frank; and Brussee, Warren T., 4,641,966, Cl. 356-237.000.
Brustle, Klaus: *See*—
Rock, Erich; and Brustle, Klaus, 4,641,394, Cl. 16-302.000.
Rock, Erich; and Brustle, Klaus, 4,641,396, Cl. 16-370.000.
Bryant, Stewart F., to U.S. Philips Corporation. Electrical circuit arrangement and electrical circuit unit for use in such an electrical circuit arrangement. 4,642,473, Cl. 307-38.000.
Bucher, George D.; and Raymond, Theodore E., to Westinghouse Electric Corp. Apparatus for unloading nuclear fuel pellets from a sintering boat. 4,642,016, Cl. 414-421.000.
Buckman, William C.; and Tapp, Michael R., to Cessna Aircraft Company, The. Cuffed aircraft propeller. 4,642,028, Cl. 416-95.000.
Buess, Gerd: *See*—
Hutterer, Frieder; Buess, Gerd; and Boebel, Manfred, 4,641,652, Cl. 128-334.00R.
Buijs, Johannes H., to U.S. Philips Corporation. Frequency multiplier having open and short circuited lines resonating a multiplied output frequency. 4,642,590, Cl. 333-218.000.
Bundy, Robert S.: *See*—
Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, 4,642,425, Cl. 379-57.000.
Buning, Robert: *See*—
Piotrowski, Bernhard; Buning, Robert; Janser, Bernhard; and Lang, Egon, 4,642,262, Cl. 428-296.000.
Bunn-O-Matic Corporation: *See*—
Zimmerman, John D., 4,642,190, Cl. 210-464.000.
Bunyan, Glen W.: *See*—
Phillips, Ian R.; Lodge, Robert H.; and Bunyan, Glen W., 4,642,099, Cl. 604-136.000.
Burgdorf, Jochen: *See*—
Belart, Juan; Burgdorf, Jochen; Bleckmann, Hans W.; Weise, Lutz; and Seibert, Wolfram, 4,641,895, Cl. 303-119.000.
Burgess, Larry W., to Interconnect Technology Inc. Multilayer circuit board manufacturing. 4,642,160, Cl. 156-630.000.
Burk, Maksymilian; and Blumenthal, Jack L., to TRW Inc. Carbonaceous material and methods for making hydrogen and light hydrocarbons from such materials. 4,642,125, Cl. 48-197.00R.
Burndy Corporation: *See*—
Anderson, James D., 4,641,428, Cl. 29-863.000.
Burositz Mobelfabrik Friedrich-W. Dauphin GmbH & Co.: *See*—
Dauphin, Elke, 4,641,886, Cl. 297-300.000.
Burstinghaus, Rainer: *See*—
Hofmeister, Peter; Burstinghaus, Rainer; and Adolphi, Heinrich, 4,642,368, Cl. 560-65.000.
Burstrom, Martin; and Tegman, Ragnar, to ASEA Aktiebolag. Method of containing radioactive or other dangerous waste material and a container for such waste material. 4,642,204, Cl. 252-633.000.
Burtin, Jean, to Agfa-Gevaert, N.V. Method of assessing the activity of a photographic developer. 4,642,276, Cl. 430-30.000.
Busse, Ronald E. Single lever control wheel chair. 4,641,847, Cl. 280-242.0WC.
Buthe, Theo: *See*—
Geisthoff, Hubert; and Buthe, Theo, 4,642,067, Cl. 464-175.000.
Butler, John L.: *See*—
Pozzo, William M.; and Butler, John L., 4,642,802, Cl. 367-168.000.
C. A. Weidmuller GmbH & Co.: *See*—
Wilmes, Manfred, 4,641,443, Cl. 40-316.000.
C-D Marketing, Ltd.: *See*—
Jacob, Keith D., 4,641,922, Cl. 350-331.00R.
C. Delachaux: *See*—
Bommart, Patrick T., 4,641,818, Cl. 269-43.000.
C. van der Lely, N.V.: *See*—
van der Lely, Edwin; and Bom, Cornelis J. G., 4,641,491, Cl. 56-228.000.
Cabourne, Michael K.: *See*—
Anhalt, John W.; and Cabourne, Michael K., 4,641,903, Cl. 339-99.00R.
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., to Sloan-Kettering Institute for Cancer Research. Cell surface antigens of human astrocytoma. 4,642,291, Cl. 435-240.000.
Calco, Frank S.: *See*—
Nakanishi, Shigeo; Calco, Frank S.; and Scarpelli, August R., 4,642,523, Cl. 315-111.810.
Cale, Albert D., Jr., to A. H. Robins Company, Incorporated. Fused aromatic oxazepinones, thiazepinones, diazepinones and sulfur analogs thereof. 4,642,343, Cl. 540-488.000.
California Institute of Technology: *See*—
Britten, Roy J., 4,642,465, Cl. 250-389.000.
Flagan, Richard C.; and Alam, Mohammed K., 4,642,227, Cl. 423-349.000.
Callahan, Patrick O., Jr., to United States of America, Navy. Apparatus for generating enhanced/regenerative bracket decode signals. 4,642,638, Cl. 342-45.000.
Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Valyocsik, Ernest W., to Mobil Oil Corporation. Process for the preparation of zeolite Beta using dibenzyldimethylammonium ions and the product produced. 4,642,226, Cl. 423-328.000.
Cam Gears Limited: *See*—
Rogers, Peter R., 4,641,406, Cl. 29-159.200.
Cambon, Gaston: *See*—
Attal, Jacques; and Cambon, Gaston, 4,641,530, Cl. 73-606.000.
Camboulives, Andre A. M. L., to Societe Nationale d'Etude et de Construction de Meteur d'Aviation (SNECMA). Exhaust nozzle assembly for a turbojet engine. 4,641,783, Cl. 239-265.390.
Cameron, John T.: *See*—
Sargent, Charles L.; Antos, John M.; Hoffman, John A.; and Cameron, John T., 4,641,383, Cl. 4-323.000.
Campbell, Robert R., to Westinghouse Electric Corp. Variable PRF target tracking radar. 4,642,641, Cl. 342-82.000.
Campbell Soup Company: *See*—
Lewbart, Harry M., 4,641,672, Cl. 134-62.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Weickert, Chris A.; and Briosi, Gordon K., 4,641,581, Cl. 102-307.000.
Canada, Her Majesty the Queen in right of the Province of Alberta, as represented by the Minister of Energy and Natural Resources: *See*—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.
Canadian Occidental Petroleum Ltd.: *See*—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.
Canfield, George D.: *See*—
Johnson, Breck J.; and Canfield, George D., 4,641,750, Cl. 206-387.000.
Cannarsa, Robert C. Sta-put wallboard joiner. 4,641,474, Cl. 52-514.000.
Cano International, N.V.: *See*—
Slater, Jack, 4,641,468, Cl. 52-309.400.
Canon Kabushiki Kaisha: *See*—
Arakawa, Junichi, 4,642,658, Cl. 346-76.0PH.
Asakura, Osamu, 4,642,657, Cl. 346-76.0PH.
Endo, Kiyonobu, 4,642,703, Cl. 358-342.000.
Honda, Haruhisa; Tsuchiya, Hiroaki; Setani, Michitaka; and Tokuhara, Mitsuhiro, 4,641,944, Cl. 355-1.000.
Ikeda, Yoshinori, 4,642,681, Cl. 358-79.000.
Matsuoka, Kazuhiko; Usui, Masayuki; Minoura, Kazuo; Baba, Takesi; and Someya, Atsushi, 4,641,920, Cl. 350-173.000.
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.
Nakahata, Kimio; Toyono, Tsutomu; Takagi, Atsushi; and Aguro, Yoshinori, 4,641,948, Cl. 355-3.0SH.
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,641,942, Cl. 354-406.000.
Sueda, Tetsuo; and Yoshii, Minoru, 4,641,962, Cl. 356-124.000.
Suzuki, Nobuyuki, 4,641,937, Cl. 354-238.100.
Toganoh, Shigeo; and Arai, Ryuichi, 4,642,654, Cl. 346-1.100.
Tsunekawa, Tokuichi; Sato, Yuichi; Kawabata, Takashi; and Matsumura, Susumu, 4,642,451, Cl. 250-201.000.
Cantrell, Gary L., to Mallinckrodt, Inc. Preparation of fluoronitrobenzene compounds in dispersion of potassium fluoride. 4,642,398, Cl. 568-937.000.
Card, George W. Cartilage punch and modified prosthesis in tympanoplasty. 4,641,651, Cl. 128-305.000.
Card-O-Matic Pty. Limited: *See*—
Stanley, Louis, 4,641,421, Cl. 29-596.000.
Carduck, Franz-Josef: *See*—
Kruse, Hans; Koester, Klaus; Carduck, Franz-Josef; Wilsberg, Heinz-Manfred; and Puchta, Rolf, 4,642,197, Cl. 252-98.000.
Cargnel, Louis A.: *See*—
Alvino, William M.; Fuller, Timothy J.; Cargnel, Louis A.; and Scala, Luciano C., 4,642,170, Cl. 204-181.400.

Carlson, Paul S., to Raytek, Inc. Infrared intrusion detector with field of view locator. 4,642,454, Cl. 250-221.000.

Carlson, Robert D. Denture with chewing inserts. 4,642,052, Cl. 433-189.000.

Carmichael, Gregory R.: *See*—
Yoshisato, Randall A.; Datta, Ravindra; and Carmichael, Gregory R., 4,642,169, Cl. 204-180.100.

Carn, Annick R.: *See*—
Gresse, Herve R.; and Carn, Annick R., 4,641,919, Cl. 350-138.000.

Carpenter, John C., to Ocean Technology, Inc. Constant current power circuit for horizontal deflection of cathode ray tube. 4,642,533, Cl. 315-408.000.

Carpenter, Keith H.; Miller, Jon E.; and Murphy, John W., to General Motors Corporation. Dynamoelectric machine with permanent magnet and magnet mounting surface arrangement. 4,642,502, Cl. 310-156.000.

Carr, Richard V. C.; Toseland, Bernard A.; and Ross, David S., to Air Products and Chemicals, Inc. Process for separating nitroaromatic compounds from spent nitric acid. 4,642,396, Cl. 568-934.000.

Carrasquel, Angel R.: *See*—
Morales, Alfredo L.; Galiasso, Roberto; Carrasquel, Angel R.; and Salazar, Jose A., 4,642,179, Cl. 208-217.000.

Cartabiano, Michael C.: *See*—
Murtha, Eugene A.; Johnson-Williams, Mark B.; Madison, Theodore N.; and Cartabiano, Michael C., 4,642,710, Cl. 360-79.000.

Carter, William S., to Xilinx, Inc. Special interconnect for configurable logic array. 4,642,487, Cl. 307-465.000.

Cartotecnica Tifernate S.p.A.: *See*—
Fronduti, Domenico, 4,641,777, Cl. 229-110.000.

Casio Computer Co., Ltd.: *See*—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.
Yamagishi, Koji; Fuse, Takahiro; Kawamura, Masao; and Matsui, Shinichi, 4,642,694, Cl. 358-236.000.

Castaigne, Jean-Paul: *See*—
Rosa, Jean; Castaigne, Jean-Paul; Demarne, Henri; and Tozzolino, Pierre, 4,642,306, Cl. 514-222.000.

Castex Products Limited: *See*—
Whitehead, Derek J.; and Shepherd, Michael T., 4,642,230, Cl. 424-15.000.

Castiglioni, Giovanni P., to F.I.C.I. Finanziaria Industriale Commerciale Immobiliare S.p.A. Equipment for slitting continuous tapes into strips with shaped side profile, in particular for metal sheet. 4,641,559, Cl. 83-333.000.

Caswell, Nathan S.; and Chang, Ifay F., to International Business Machines Corporation. Light pen input system having two-threshold light sensing. 4,642,459, Cl. 250-227.000.

Cavagna, Elio, to Elio Cavagna S.r.l. Device for embossing and/or creasing sheet, or roll material. 4,641,575, Cl. 101-23.000.

Cavanagh, Michael J., to Minnesota Mining and Manufacturing Company. Tape applying device. 4,642,157, Cl. 156-468.000.

CBC Industries, Inc.: *See*—
Tsui, Gary; and Heimbigner, Thomas, 4,641,986, Cl. 403-164.000.

Cedoz, Robert W., to General Motors Corporation. Brake for counter rotating bladed members. 4,642,029, Cl. 416-129.000.

Cedrone, Nicholas J.; and Lee, Kenneth R., to Daymarc Corporation. Momentum arresting device for an integrated circuit tester. 4,641,738, Cl. 193-40.000.

Celanese Corporation: *See*—
Che, Tessie M., 4,642,394, Cl. 568-861.000.
Goldberg, Harris A.; Kalnin, Ilmar L.; Williams, Clyde C.; and Spain, Ian L., 4,642,664, Cl. 357-2.000.

Centala, John P.; and McElreath, Kenneth W., to Rockwell International Corporation. Automatic flight control with pilot fly-through. 4,642,774, Cl. 364-434.000.

Central Glass Company, Limited: *See*—
Yasumura, Takashi; Koishi, Toshio; and Tanaka, Isao, 4,642,326, Cl. 525-153.000.

Central Plastics Company: *See*—
Ramsey, Russel G., 4,642,155, Cl. 156-359.000.

Centre National de la Recherche Scientifique: *See*—
Attal, Jacques; and Cambon, Gaston, 4,641,530, Cl. 73-606.000.

Cerberus AG: *See*—
Guttinger, Hannes; and Pfister, Gustav, 4,642,471, Cl. 250-574.000.

Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., to N P S P "Desintegrator". Apparatus for material grinding. 4,641,791, Cl. 241-66.000.

Cerni, Samuel: *See*—
Wilson, John F.; Gjertsen, Robert K.; and Cerni, Samuel, 4,642,217, Cl. 376-451.000.

Cessna Aircraft Company, The: *See*—
Buckman, William C.; and Tapp, Michael R., 4,642,028, Cl. 416-95.000.

CGR Ultrasonic: *See*—
Bele, Robert, 4,641,660, Cl. 128-660.000.

Chakrabarti, Kirti B.: *See*—
English, George J.; and Chakrabarti, Kirti B., 4,642,514, Cl. 313-111.000.

Chalke, Brian J., to Lucas Industries public limited company. Electric starting aid for an internal combustion engine. 4,641,612, Cl. 123-145.00A.

Chambers, Jeffrey, to Oxley Developments Company Limited. Feed through filter having an insulated bush for mounting filter in a bulkhead. 4,642,589, Cl. 333-182.000.

Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. Unsaturated eicosanoic acids. 4,642,364, Cl. 556-438.000.

Chan, Tai W.; and Nguyen, Huong T., to Syntex (U.S.A.) Inc. Anhydrous crystalline 9-(1,3-dihydroxy-2-propoxymethyl)guanine. 4,642,346, Cl. 544-276.000.

Chang, Clarence D.: *See*—
Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Valyocsik, Ernest W., 4,642,226, Cl. 423-328.000.

Chang, Ifay F.: *See*—
Caswell, Nathan S.; and Chang, Ifay F., 4,642,459, Cl. 250-227.000.

Chang, Keh-Minn: *See*—
Taub, Alan I.; Huang, Shyh-Chin; and Chang, Keh-Minn, 4,642,139, Cl. 148-3.000.

Chapin, Richard D. Drip irrigation system employing flow regulation. 4,642,152, Cl. 156-203.000.

Chapman, Scott G.: *See*—
Dunkerton, Stephen H.; Reynolds, Gary R.; Chapman, Scott G.; and Erickson, Gary D., 4,642,633, Cl. 340-825.760.

Charra, Jean-Pierre, to Berthiez-Saint-Etienne. Tool and attachment gripping and releasing means. 4,641,415, Cl. 29-568.000.

Chase, Michael. Magnetic occluding device. 4,642,257, Cl. 428-63.000.

Chason, Marc K.; Tomase, Joseph P.; and Onystok, Michael J., to Motorola, Inc. Edge-mounting configuration for at-strip resonators. 4,642,511, Cl. 310-348.000.

Chauvin, Yves; and Commereuc, Dominique, to Institut Francais du Petrole. Method for the removal of nickel, aluminum and chlorine from olefin oligomers. 4,642,408, Cl. 585-836.000.

Che, Tessie M., to Celanese Corporation. Production of propanediols. 4,642,394, Cl. 568-861.000.

Cheminal, Bernard; Mathais, Henri; and Thomarat, Marc, to Atochem. Process for the preparation of pure hydrates of fluoral and of hexafluoroacetone from hemiacetals. 4,642,386, Cl. 568-405.000.

Chen, Yih-Wen: *See*—
Noufi, Rommel; and Chen, Yih-Wen, 4,642,140, Cl. 148-6.240.

Chesnut, Paul B., to Whirlpool Corporation. Power screw protector for refuse compactor. 4,641,574, Cl. 100-229.00A.

Chiba, Mitsuyoshi: *See*—
Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.

Chicago Bridge & Iron Company: *See*—
Haynie, Timothy J., 4,641,706, Cl. 165-118.000.

Chida, Fumio: *See*—
Ichikawa, Haruo; Chida, Fumio; Akiike, Katsumi; and Izumi, Kanichi, 4,642,598, Cl. 337-82.000.

Chisso Corporation: *See*—
Sugimori, Shigeru; and Nigorikawa, Kazunori, 4,642,199, Cl. 252-299.610.

Cho, Gyu-Hyeong, to Westinghouse Electric Corp. Fault-protection apparatus for static AC-to-AC converters and unrestricted frequency changer (UFC) system including such fault-protection apparatus. 4,642,747, Cl. 363-54.000.

Cho, Myong J.: *See*—
Lin, Santa H. C.; and Cho, Myong J., 4,642,238, Cl. 426-74.000.

Chow, Edward Y.; and Kleinberg, Robert L., to Schlumberger Technology Corporation. Fracture detection using circumferential offset acoustic paths. 4,641,724, Cl. 181-104.000.

Christensen, Daniel C.: *See*—
Brownell, David J.; Christensen, Daniel C.; Erie, David G.; and Youngner, Daniel, 4,642,162, Cl. 156-643.000.

Christensen, Dean L.: *See*—
Georgens, Harold H.; and Christensen, Dean L., 4,642,721, Cl. 360-132.000.

Christenson, Robert J., to GMI Engineering & Management Institute. Cushion for a swing or the like and method for making same. 4,641,835, Cl. 272-87.000.

Christian, Philip; and Tawse, Alan I., to Bridon plc. Method and equipment for making wire strands. 4,641,689, Cl. 140-149.000.

Christians, Scott T.: *See*—
McCarthy, Timothy D.; Christians, Scott T.; and Olmstead, A. Dale, 4,642,787, Cl. 364-561.000.

Christodoulou, Marios: *See*—
Turner, John T.; and Christodoulou, Marios, 4,642,185, Cl. 210-242.300.

Chrysler Motors Corporation: *See*—
Michalke, Klaus A., 4,641,390, Cl. 15-250.230.

Chu, George H.: *See*—
Nguyen, Hoc M.; and Chu, George H., 4,642,117, Cl. 623-11.000.

Chung, Albert E., to University of Pittsburgh. Novel hybridoma cell line producing monoclonal antibodies against laminin and a process for the production thereof. 4,642,293, Cl. 435-240.000.

Church, John E. Aerosol can agitator. 4,641,974, Cl. 366-342.000.

Cianci, Giuseppe; and Traverso, Carlo, to 501 Saipem S.p.A. Tube coupler, particularly suitable for platform foundation piles. 4,641,984, Cl. 403-14.000.

Ciba-Geigy Corporation: *See*—
Berger, Joseph, 4,642,353, Cl. 548-431.000.
Davatz, Alexander; and Somlo, Tibor, 4,642,350, Cl. 548-260.000.
Spivack, John D.; Pastor, Stephen D.; and Odorisio, Paul, 4,642,382, Cl. 568-12.000.
Wehner, Wolfgang; Muller, Horst, deceased; and Schneider, Rainer, 4,642,322, Cl. 524-191.000.

Cincinnati Milacron Inc.: *See*—
Bailey, Edward J., 4,642,212, Cl. 264-262.000.

Citizen Watch Co., Ltd.: *See*—
Murata, Mitsuhiro, 4,642,628, Cl. 340-784.000.
Togashi, Seigo, 4,642,619, Cl. 340-701.000.
Togashi, Seigo; and Sekiguchi, Kanetaka, 4,642,620, Cl. 340-713.000.

Clark, Anthony F. C.: *See*—
Rohsler, Ivor C.; and Clark, Anthony F. C., 4,642,671, Cl. 357-79.000.

Clark, Michael; and Taylor, Kenneth J., to Dunlop Limited. Vibration absorbing mountings. 4,641,817, Cl. 267-140.100.

Clark, Robin D.; and Waterbury, L. David, to Syntex (U.S.A.) Inc. Arylalkyl amines useful for lowering intraocular pressure. 4,642,378, Cl. 564-51.000.

Clarke, William, to Bremen Associates Incorporated. Cutting tool for making a smooth saw cut. 4,641,562, Cl. 83-837.000.

Clayland, John W., Jr.; and Daniel, Carl P., to American Hospital Supply Corp. Specimen analysis instrument assembly. 4,641,528, Cl. 73-597.000.

Clayman, Henry; and Longacre, James R. Buoyant posterior chamber intraocular lens implant. 4,642,116, Cl. 623-6.000.

Clayton Foundation for Research: *See*—
Mullani, Nizar A., 4,642,464, Cl. 250-363.00S.

Clements, Silous F.; Motola, Patrick D.; and Swift, Shirley F., to International Business Machines Corporation. Data processor printer setup through a remote display terminal. 4,642,792, Cl. 364-900.000.

Clemson University: *See*—
Cooke, Francis W., 4,642,124, Cl. 623-23.000.

Clifton, Orville J. Weight lifting apparatus for exercising the triceps. 4,641,836, Cl. 272-122.000.

Cline, J. Douglas; Wilson, James A.; Feher, Stanley H.; and Ward, George D., to Sundstrand Data Control, Inc. Airborne flight planning and information system. 4,642,775, Cl. 364-443.000.

Cobb, Ronald W.; Lollis, Charles A.; and Crane, Nancy S., to Apco Graphics, Inc. Post cap apparatus. 4,641,448, Cl. 40-606.000.

Cocke, John; Markstein, Peter W.; and Markstein, Victoria I., to International Business Machines Corporation. Optimization of range checking. 4,642,765, Cl. 364-300.000.

Codex Corporation: *See*—
Parker, Lanny L., 4,642,488, Cl. 307-475.000.

Coenen, Hubert; and Hagen, Rainer, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Process for the production of liquid hydrocarbons. 4,642,401, Cl. 585-241.000.

Coenen, Joseph D., to Kimberly-Clark Corporation. Apparatus and method for applying transverse elastic segments. 4,642,151, Cl. 156-164.000.

Cohn, David W., to General Electric Company. Fluorescent lighting system. 4,642,741, Cl. 362-320.000.

Cok, David R., to Eastman Kodak Company. Signal processing method and apparatus for producing interpolated chrominance values in a sampled color image signal. 4,642,678, Cl. 358-44.000.

Cole, Jack H.; and Fair, Delbert W., to Conoco Inc. Wide dynamic range hydraulic vibrator. 4,641,725, Cl. 181-119.000.

Colebrand Limited: *See*—
Daley, Edward, 4,641,601, Cl. 118-305.000.

Collagen Corporation: *See*—
Nguyen, Hoc M.; and Chu, George H., 4,642,117, Cl. 623-11.000.

Collins, David W.; and Weed, Michael A., to International Business Machines Corporation. Phase difference demodulator. 4,642,562, Cl. 324-83.00D.

Color Systems Technology, Inc.: *See*—
Weinger, Ralph, 4,642,676, Cl. 358-22.000.

Columbia Gas System Service Corporation: *See*—
Jatana, Subhash C., 4,641,631, Cl. 126-101.000.
Winter, Edward M.; Price, David E.; and Hook, James E., 4,641,588, Cl. 110-203.000.

Combustion Engineering, Inc.: *See*—
Moscardini, Robert L., 4,641,789, Cl. 241-31.000.
Ross, Bruce A., 4,642,557, Cl. 324-71.200.
Waryasz, Richard E., 4,641,608, Cl. 122-510.000.

Comdox No. Pty. Ltd.: *See*—
Trethewey, Reginald, 4,641,833, Cl. 272-72.000.

Commander Electrical Materials, Inc.: *See*—
Nattel, William, 4,642,420, Cl. 174-53.000.

Commereuc, Dominique: *See*—
Chauvin, Yves; and Commereuc, Dominique, 4,642,408, Cl. 585-836.000.

Commissariat a l'Energie Atomique: *See*—
Arnaudet, Lucile; and Folcher, Gerard, 4,642,337, Cl. 534-11.000.
Detriche, Jean-Marie, 4,642,447, Cl. 219-124.340.

Compagnie de Materiel de Micrographie "C.M.M." : *See*—
Gresse, Herve R.; and Carn, Annick R., 4,641,919, Cl. 350-138.000.

Compagnie des Transmissions Mecaniques Sedis: *See*—
Dupoyet, Guy, 4,642,078, Cl. 474-206.000.
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.

Compania Espanola de Petroleos, S.A.: *See*—
Elia De Miguel, Maria-Fe; Miro Roig, Pedro; and Pares Olivet, Eulalia, 4,642,288, Cl. 435-99.000.

Computerized Security Systems, Inc.: *See*—
Miron, William L., 4,641,868, Cl. 292-336.300.

Comroe, Richard A.; and Petrie, Adelore F., to Motorola, Inc. Fault tolerant receiver. 4,642,807, Cl. 371-31.000.

Conley, John M.; and Bowen, Paul D. Cleaning device for paint rollers and brushes. 4,641,673, Cl. 134-138.000.

Connolly, John C.; and Botez, Dan, to RCA Corporation. Method of making a double heterostructure laser. 4,642,143, Cl. 148-171.000.

Conoco Inc.: *See*—
Cole, Jack H.; and Fair, Delbert W., 4,641,725, Cl. 181-119.000.
Powers, Maston L.; Dodson, Christopher J.; Moore, John S.; and Ghassemi, Farhad, 4,641,709, Cl. 166-252.000.
Sternberg, Ben K.; Dunster, Donald E.; and Honeycutt, Kenneth D., 4,642,570, Cl. 324-366.000.

Conradty GmbH & Co. Metallelektroden KG: *See*—
Koziol, Konrad; and Wenk, Erich, 4,642,173, Cl. 204-242.000.

Conti, Joseph A.: *See*—
Morino, Ronald; and Conti, Joseph A., 4,641,773, Cl. 228-1.100.

Control Interface Company Limited: *See*—
Bohmer, William; Betancourt, Walter J.; and Hoffman, Louis S., 4,641,923, Cl. 350-335.000.

Cook, John F., to McNeil Corporation. Fluid flow monitoring system. 4,642,614, Cl. 340-608.000.

Cooke, Francis W., to Clemson University. Hip prosthesis. 4,642,124, Cl. 623-23.000.

Cooper Industries, Inc.: *See*—
Hurley, James R., 4,642,564, Cl. 324-132.000.
Merrill, George O., 4,641,877, Cl. 294-101.000.

Cooper, Neil; and Mayes, James T., to Scripps Clinic and Research Foundation. Method and system for detection of complement pathway activation. 4,642,284, Cl. 435-7.000.

Corbett, Richard M.: *See*—
Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, 4,642,425, Cl. 379-57.000.

Corke, Michael: *See*—
Jackson, David A.; Corke, Michael; and Kersey, Alan D., 4,642,458, Cl. 250-225.000.

Cormack, Alexander D.: *See*—
Hooper, Anthony W.; Cormack, Alexander D.; and Marchand, Pierre, 4,642,015, Cl. 414-325.000.

Cornelissen, Bernardus H. J.; and Wulms, Henricus E. J., to U.S. Philips Corporation. Digital switching circuit having insulated gate field effect transistors for clamping the nonconductive output transistor off. 4,642,485, Cl. 307-443.000.

Corominas, Narciso L., to Metalquimia, S.A. Bulk meat feed machine. 4,641,691, Cl. 141-73.000.

Costanzo, Phillip A.: *See*—
Ward, Thomas H.; Costanzo, Phillip A.; Pietrasz, Vincent; and Soeder, Edmund J., 4,642,516, Cl. 313-481.000.

Cotrel, Claude; Guyon, Claude; Roussel, Gerard; and Taurand, Gerard, to Rhone-Poulenc Sante. N-(1,8-naphthyridin-2-yl) amides and their pharmaceutical use. 4,642,308, Cl. 514-253.000.

Cotrel, Yves P. C. A. Device for supporting the rachis. 4,641,636, Cl. 128-69.000.

Couture, Gerard. Overload clutch with automatic reset. 4,641,735, Cl. 192-56.00L.

Cowfer, Joseph A.; and Best, James E., to B. F. Goodrich Company, The. Process for finishing vinyl chloride monomer. 4,642,400, Cl. 570-238.000.

Cox, David H.; Andreas, David W.; and Watkins, James D., to Golden Valley Microwave Foods Inc. Microwave reflective energy concentrating spacer. 4,642,434, Cl. 219-10.55E.

Cox, Karmen D.: *See*—
Steiner, Robert E.; Cox, Karmen D.; Terpstra, Daniel A.; Metzger, James J., Jr.; and Plume, Steven H., 4,641,557, Cl. 83-71.000.

Crandell, Walter R., to Fast Heat Element Manufacturing Co., Inc. Method of making electrically heated nozzles and nozzle systems. 4,641,423, Cl. 29-611.000.

Crane, Nancy S.: *See*—
Cobb, Ronald W.; Lollis, Charles A.; and Crane, Nancy S., 4,641,448, Cl. 40-606.000.

Cravotta, Samuel A. Weed cutter and extractor. 4,641,712, Cl. 172-25.000.

Creasy, Walter S.; Lorenz, Donald H.; LaCasse, Robert G.; and Malagreca, Salvatore A., to Hydromer, Inc. Hydrophilic polymer blend. 4,642,267, Cl. 428-413.000.

Creedon, Richard L., to GA Technologies Inc. Barrel assembly for electromagnetic rail gun. 4,641,567, Cl. 89-8.000.

Crouzet: *See*—
Morille, Robert; and Saroul, Jacques, 4,642,560, Cl. 324-73.0PC.

Crump, Herschel W. Intruder detection and deterrent system. 4,642,612, Cl. 340-541.000.

Crusi, Suzanne B.: *See*—
Klinvex, Daniel E.; Crusi, Suzanne B.; Kepes, William E.; and Vano, Joseph A., 4,642,215, Cl. 376-249.000.

Cryoblast, Inc.: *See*—
Moore, David E., 4,641,786, Cl. 239-590.000.

Cseh, Otto: *See*—
Balazs, Janos; Bocskor, Adam; Cseh, Otto; and Iring, Rezso, 4,641,607, Cl. 122-360.000.

Cucco, Gian C.: *See*—
Semin, Fikret; Guermandi, Romano; and Cucco, Gian C., 4,641,696, Cl. 152-209.00R.

Culbertson, Edwin C., to American Hoechst Corporation. Antistat coated films. 4,642,263, Cl. 428-336.000.

Cumming, Stephen A.; and Kelly, James D., to Amersham International plc. Bone-seeking complexes of Technetium-99m. 4,642,229, Cl. 424-1.100.

Cummins, Edmund M., to International Business Machines Corp. Batch file processing. 4,642,763, Cl. 364-300.000.

Custom Machinery Design, Inc.: *See*—
Gietman, Peter J., Jr., 4,642,084, Cl. 493-190.000.

Cutts, William H.: *See—*
Seydel, Scott O.; Letbetter, William D.; and Cutts, William H., 4,641,404, Cl. 28-178.000.
Cuypers, Martinus H.: *See—*
Horowitz, Alexandre; Cuypers, Martinus H.; and van Rooji, Jacobus H. M., 4,642,079, Cl. 474-219.000.
Dackow, Paul N., to RCA Corporation. System for determining time duration of angular rotation. 4,642,772, Cl. 364-431.040.
Dai, Shenghong A., to Dow Chemical Company, The. Azetidinedione urethanes. 4,642,342, Cl. 540-356.000.
Daikin Industries Ltd.: *See—*
Kobayashi, Tadashi, 4,641,503, Cl. 62-259.100.
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Maeda, Kiyoshi; and Ueyama, Tsutomu, 4,642,701, Cl. 358-296.000.
Ohi, Michio, 4,642,699, Cl. 358-280.000.
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinor, 4,641,951, Cl. 355-7.000.
Yamada, Mitsuhiko, 4,642,680, Cl. 358-78.000.
Yamada, Mitsuhiko, 4,642,698, Cl. 358-260.000.
Yoshimi, Yasuhito, 4,641,941, Cl. 354-324.000.
Daiwa Can Company, Limited: *See—*
Yamamoto, Masatoshi; Kawai, Yasushi; Shudo, Katsuyoshi; Kato, Hiroyuki; and Masuda, Shunsuke, 4,642,437, Cl. 219-84.000.
Dalal, Samir K., to Honeywell Inc. Electrostatic discharge protection for electronic equipment. 4,642,727, Cl. 361-212.000.
Daley, Edward, to Colebrand Limited. Underwater painting. 4,641,601, Cl. 118-305.000.
Dalliard, Fernand, to Ateliers de Constructions Mecaniques de Vevey S.A. Suspended motorized vehicle. 4,641,587, Cl. 105-3.000.
Damico, Joyce A.: *See—*
Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., 4,641,381, Cl. 2-400.000.
Damon Corporation: *See—*
Dorffler, Michael K., 4,642,062, Cl. 446-68.000.
Danfoss A/S: *See—*
Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, 4,641,537, Cl. 73-861.120.
Jacobsen, Hans E.; Hansen, Henning M.; Nyrup, John; Hansen, Henry; and Lassithiotakis, Konstantin, 4,641,536, Cl. 73-861.120.
Daniel, Carl P.: *See—*
Clayland, John W., Jr.; and Daniel, Carl P., 4,641,528, Cl. 73-597.000.
Danieli & C. Officine Meccaniche SpA: *See—*
Duri , Antonino, 4,641,512, Cl. 72-201.000.
Poloni, Alfredo, 4,641,511, Cl. 72-160.000.
Daniels, Edward P.: *See—*
Mallozzi, Joseph; Dinan, David E.; and Daniels, Edward P., 4,642,791, Cl. 364-900.000.
Dard, Philippe, to Sciaky S.A. Installation of electron beam metalworking. 4,642,518, Cl. 315-1.000.
Darecchio, Andrea, to FMC Corporation. Machine and method for cutting, shaping and canning meat, fish and the like. 4,641,487, Cl. 53-435.000.
Das, Suryya K.: *See—*
Ranka, Ajay I.; and Das, Suryya K., 4,642,323, Cl. 524-458.000.
Data Electronics, Inc.: *See—*
Georgens, Harold H.; and Christensen, Dean L., 4,642,721, Cl. 360-132.000.
Datta, Ravindra: *See—*
Yoshisato, Randall A.; Datta, Ravindra; and Carmichael, Gregory R., 4,642,169, Cl. 204-180.100.
Datte, Mark A.: *See—*
Voss, Karl D.; Datte, Mark A.; and Ruff, Gary F., 4,641,703, Cl. 164-255.000.
Daumuller, Hans; and Weber, Walter, to Robert Bosch GmbH. Bulb assembly for a vehicle headlight. 4,642,739, Cl. 362-226.000.
Dauphin, Elke, to Burositz Mobelfabrik Friedrich-W. Dauphin GmbH & Co. Gas spring arrangement, especially for a backrest support for office chairs. 4,641,886, Cl. 297-300.000.
Davatz, Alexander; and Somlo, Tibor, to Ciba-Geigy Corporation. Novel process for preparation of benzotriazoles using aryldiols and quinones. 4,642,350, Cl. 548-260.000.
Davies, David J. G.; Meakin, Brian J.; and Rees, John E., to University of Bath. Disinfection of contact lenses. 4,642,234, Cl. 424-78.000.
Davis, Edward D.: *See—*
Stevens, Gerald S., Jr.; Sapitowicz, Thomas P.; and Davis, Edward D., 4,642,660, Cl. 346-140.00R.
Davituliani, Valentin V.: *See—*
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.
Dawson, Luther C.: *See—*
Leming, Anthony D.; and Dawson, Luther C., 4,641,431, Cl. 30-276.000.
Dayco Corporation: *See—*
Howerton, Anderson W., 4,642,076, Cl. 474-201.000.
Daymarc Corporation: *See—*
Cedrone, Nicholas J.; and Lee, Kenneth R., 4,641,738, Cl. 193-40.000.
Dean, Walter C., II, to KCR Technology, Inc. Printer with drive on swinging platform. 4,642,661, Cl. 346-153.100.
Debarbieri, Franco; Montorsi, Roberto; and Zaramella, Giancarlo, to Armco, Inc. Programmable automatic manipulator system. 4,642,752, Cl. 364-167.000.
De brey, Robert J., to Geneva Group of Companies, Inc. Compact digital disc cleaner apparatus. 4,641,391, Cl. 15-104.940.
De Cortanze, Andre , to Elf France. Manual actuating device, especially for steering a motorcycle. 4,641,849, Cl. 280-270.000.
Deere & Company: *See—*
Gold, Raymond D.; and Riegel, Leo W., 4,641,820, Cl. 269-58.000.
Nyquist, Gary A., 4,642,035, Cl. 417-312.000.
Rabe, Bernd, 4,641,545, Cl. 74-476.000.
Shirley, Ralph E., 4,642,770, Cl. 364-424.000.
Degussa Aktiengesellschaft: *See—*
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.
Prescher, Guenter; Grund, Andreas; Petsch, Heinrich; and Boehme, Georg, 4,642,387, Cl. 568-446.000.
Degussa Electronics Inc.: *See—*
Lowe, James H. C., 4,641,704, Cl. 164-474.000.
De Haan, Frans W.; Wynia, Jan; and Zwanenburg, Rob, to Fokker B.V. System for retaining or releasing spacecraft solar panels. 4,641,798, Cl. 244-173.000.
deKok, Peter T. Removable mount for cutting means. 4,641,628, Cl. 125-15.000.
Delesalle, Jacques, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Process for the starting and low-load running of a diesel engine and a diesel engine putting this process into practice. 4,641,613, Cl. 123-179.00H.
Delgado, Jose M. R. Electronic system for the activation, inhibition and/or modification of the development and functioning of cells, organs and organisms of living beings. 4,641,633, Cl. 128-1.300.
DeLord, Ernest P. Rail for an air turning vane assembly. 4,641,684, Cl. 137-561.00A.
Delta Salvage Energy, Inc.: *See—*
Roberts, Alfred L., 4,641,606, Cl. 122-214.000.
Demarne, Henri: *See—*
Rosa, Jean; Castaigne, Jean-Paul; Demarne, Henri; and Tozzolino, Pierre, 4,642,306, Cl. 514-222.000.
Demmer, Walter H., to U. S. Philips Corporation. Increasing the resolution of a digitized, time-dependent signal. 4,642,689, Cl. 358-166.000.
Demonbreun, Betty J., to McCloy, W. Stuart, Jr.; and McCloy, W. Stuart, Sr. Lock mechanism. 4,641,507, Cl. 70-339.000.
Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,642,372, Cl. 560-124.000.
Dempster Systems, Inc.: *See—*
Sutton, Gary, 4,642,019, Cl. 414-525.00R.
Denick, John, Jr.: *See—*
Peters, David; Denick, John, Jr.; and Talwar, Anil K., 4,642,231, Cl. 424-15.000.
Dery, Ronald A.; and Jones, Warren C., to AMP Incorporated. Adhesive electrical interconnecting means. 4,642,421, Cl. 174-88.00R.
Desjarlais, Robert C., to James River Graphics, Inc. Fast coupling lemon-yellow phenolic couplers. 4,642,383, Cl. 568-48.000.
Dessau, Ralph M.; and Kerr, George T., to Mobil Oil Corporation. Methanol conversion using reactivated zeolite. 4,642,407, Cl. 585-640.000.
De Stefanis, Vincent A.; Erickson, Robert W.; and Ranum, Peter M., to Pennwalt Corporation. Stable oxidant alpha-amylase concentrates for use in baking. 4,642,237, Cl. 426-64.000.
Detriche, Jean-Marie, to Commissariat a l'Energie Atomique. Process for the resetting of the path of a member and apparatus for performing this process. 4,642,447, Cl. 219-124.340.
Dettbarn, Hans-Jurgen; and Zimmermann, Josef, to Hoechst Aktiengesellschaft. Locking mechanism for the removable vaccine pump of a needleless injection instrument. 4,642,095, Cl. 604-72.000.
Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Quast, Armin W.; and Horstmann, Karl H., 4,641,799, Cl. 244-207.000.
Deutsche Thomson-Brandt GmbH: *See—*
Geiger, Erich; and Kaaden, Jurgen, 4,642,707, Cl. 360-76.000.
Development Finance Corporation of New Zealand, Limited: *See—*
Filmer, Alan M., 4,641,442, Cl. 40-219.000.
DeVisser, Richard B.; and Hagerty, Sydney, to Dover Corporation. Backwash apparatus for multi element filter unit. 4,642,188, Cl. 210-333.100.
de Vos, Hendrik A. J.; and Labouliere, Elzear R., to GTE Products Corporation. Luminaire with pivotal cover member having compressible gasket. 4,642,742, Cl. 362-375.000.
Diamedix Corporation: *See—*
Halbert, Seymour P.; and Anken, Milton, 4,642,285, Cl. 435-7.000.
Diamond, George B. Expandable pressurized barrier container. 4,641,765, Cl. 222-386.500.
Digital Equipment Corporation: *See—*
Beck, John C.; and Dobberpuhl, Daniel W., 4,642,492, Cl. 307-578.000.
Dilling, Peter, to Westvaco Corporation. Ammonium lignosulfonates. 4,642,336, Cl. 530-500.000.
Dinan, David E.: *See—*
Mallozzi, Joseph; Dinan, David E.; and Daniels, Edward P., 4,642,791, Cl. 364-900.000.

Director of National Food Research Institute: *See*—
Noguchi, Akinori, 4,642,241, Cl. 426-634.000.

Dlubak, Frank C., to Dlubak, Frank C. Laminated article and process for making same. 4,642,255, Cl. 428-38.000.

DNAX Research Institute of Molecular and Cellular Biology, Inc.: *See*—
Moore, Kevin W.; and Zaffaroni, Alejandro, 4,642,334, Cl. 530-388.000.

Dobberpuhl, Daniel W.: *See*—
Beck, John C.; and Dobberpuhl, Daniel W., 4,642,492, Cl. 307-578.000.

Dobring, Wilfried: *See*—
Baitz, Guenter; and Dobring, Wilfried, 4,642,449, Cl. 235-22.000.

Dobson, William: *See*—
Green, C. Brad; Dobson, William; and Abel, Stephen G., 4,641,405, Cl. 29-157.10R.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Rutschmann, Erwin, 4,641,610, Cl. 123-52.0MV.

Dodson, Christopher J.: *See*—
Powers, Maston L.; Dodson, Christopher J.; Moore, John S.; and Ghassemi, Farhad, 4,641,709, Cl. 166-252.000.

Dodson, David M., to Robertshaw Controls Company. Electronic water heater thermostat system. 4,641,778, Cl. 236-20.00R.

Dogadko, Peter; and Enlow, David, to Outboard Marine Corporation. Overspeed/overheat circuit with a latch for capacitive ignition systems. 4,641,618, Cl. 123-335.000.

Domtar Inc: *See*—
St.-Michel, Andre , 4,642,268, Cl. 428-453.000.

Don Fell Limited: *See*—
Takeuchi, Seiji; and Anger, Byron H., 4,641,760, Cl. 220-1.00B.

Donfab Investments, Inc.: *See*—
Takeuchi, Seiji; and Anger, Byron H., 4,641,760, Cl. 220-1.00B.

Donn Incorporated: *See*—
Menchetti, Robert J., 4,642,418, Cl. 174-48.000.

Donohue, James M., to Xerox Corporation. Selective development control for electrostatic reproduction machines. 4,641,952, Cl. 355-14.00R.

Dorffler, Michael K., to Damon Corporation. Nose weight for toy aircraft. 4,642,062, Cl. 446-68.000.

Dorhmann, Wolfgang: *See*—
Lohr, Karl-Heinz; Kohberg, Ewald; Kuchheuser, Werner; and Dorhmann, Wolfgang, 4,641,872, Cl. 293-133.000.

Dornbusch, Arthur H.; and Schanzle, Roger E., to Procter & Gamble Company, The. Tray-type shipping and display container. 4,641,746, Cl. 206-44.00R.

Dorner, Jurgen: *See*—
Ruthrof, Klaus; Korner, Rudolf; and Dorner, Jurgen, 4,642,417, Cl. 174-36.000.

Doshi, Pratap K.: *See*—
Orr, William L.; Doshi, Pratap K.; Mildrum, Claude M.; and Freeman, Thomas R., 4,642,216, Cl. 376-327.000.

Douklias, Nikolaos; and Grabmaier, Josef, to Siemens Aktiengesellschaft. Method for manufacturing preforms of glass for optical fibers. 4,642,129, Cl. 65-3.120.

Doutsubo, Nobuhide, to Sanyo Electric Co., Ltd. Video signal reproducing apparatus using pilot signal system. 4,642,704, Cl. 360-10.200.

Dover Corporation: *See*—
DeVisser, Richard B.; and Hagerty, Sydney, 4,642,188, Cl. 210-333.100.

Dow Chemical Company, The: *See*—
Aucoin, Daniel A., 4,642,554, Cl. 324-51.000.
Dai, Shenghong A., 4,642,342, Cl. 540-356.000.
Hunter, Douglas L.; and Moore, Stanley E., 4,642,395, Cl. 568-883.000.
Kirchhoff, Robert A.; Schrock, Alan; and Gilpin, Jo A., 4,642,329, Cl. 526-284.000.
Renga, James M., 4,642,349, Cl. 546-302.000.
Rogers, Richard B.; and Gerwick, B. Clifford, III, 4,642,338, Cl. 534-558.000.
Turner, Robert B.; Peffley, Richard D.; and Vanderhider, James A., 4,642,320, Cl. 521-176.000.
Woo, Edmund P.; and Price, Diana R., 4,642,351, Cl. 548-317.000.
Wood, Clayton D.; Garrou, Philip E.; Kohatsu, Iwao; and Gleason, Edward F., 4,642,302, Cl. 502-332.000.

Dow Corning Corporation: *See*—
Miller, Richard T.; Sukhman, Yefim P.; and Welker, Lynn C., 4,642,439, Cl. 219-121.0LN.

Downey, William. Implement for evacuating the contents of drainable ostomy pouches. 4,642,106, Cl. 604-332.000.

Doyle, Terrence W.: *See*—
Kaneko, Takushi; Wong, Henry S. L.; and Doyle, Terrence W., 4,642,352, Cl. 548-422.000.

Drachenberg, Franz: *See*—
Herbig, Henning; Heinze, Horst; Drachenberg, Franz; and Pontoppidan, Knud, 4,642,652, Cl. 343-915.000.

Draghicchio, Pietro, to Rockwell-Rimoldi S.p.A. Adjustable drive shaft for multi-head sewing machine. 4,641,591, Cl. 112-155.000.

Drent, Eit, to Shell Oil Company. Process for the preparation of diesters of dicarboxylic acids. 4,642,371, Cl. 560-114.000.

Drexler, Jerome, to Drexler Technology Corporation. Optical data retrieval system for multi-characteristic reflective data storage media. 4,642,803, Cl. 369-54.000.

Drexler Technology Corporation: *See*—
Drexler, Jerome, 4,642,803, Cl. 369-54.000.

Drori, Mordeki. Multiple-disc type filter with extensible support. 4,642,182, Cl. 210-232.000.

Droulon, Georges: *See*—
Pipon, Yves; and Droulon, Georges, 4,641,806, Cl. 248-430.000.

DSL Dynamic Sciences Limited: *See*—
Schmid, Hartmut, 4,641,892, Cl. 303-47.000.

DuBois, Dale R.: *See*—
Learn, Arthur J.; and DuBois, Dale R., 4,641,604, Cl. 118-728.000.

Dubroff, Seymour. Intraocular lenses. 4,642,113, Cl. 623-6.000.

Dubuisson, Jacques; Le Gal, Pascal; and Boutterin, Rene , to Eurofarad-EED. Method of making alumina interconnection substrate for an electronic component. 4,641,425, Cl. 29-830.000.

Dudek, Evelin. Disposable diaper. 4,642,110, Cl. 604-385.100.

Dudin, Vladimir P.: *See*—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

Dudley, Hubert T.: *See*—
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,641,471, Cl. 52-361.000.
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,641,472, Cl. 52-361.000.

Dumas, Gregory P.; and Sutterlin, Philip H., to Rolm Corporation. Digital link for telephone station sets. 4,642,805, Cl. 370-58.000.

Dumschat, Helmut: *See*—
Braun, Hermann; Dumschat, Helmut; Strommer, Kurt; and Mueller, Sieghard, 4,641,515, Cl. 72-405.000.

Duncan, Keith B.: *See*—
Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Searcan, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, 4,642,425, Cl. 379-57.000.

Dunkerton, Stephen H.; Reynolds, Gary R.; Chapman, Scott G.; and Erickson, Gary D., to Motorola, Inc. Individual simulcast station control system. 4,642,633, Cl. 340-825.760.

Dunlop Limited: *See*—
Clark, Michael; and Taylor, Kenneth J., 4,641,817, Cl. 267-140.100.

Dunn, Charlton, to Rockwell International Corporation. Vented shrouded inducer. 4,642,023, Cl. 415-53.00R.

Dunster, Donald E.: *See*—
Sternberg, Ben K.; Dunster, Donald E.; and Honeycutt, Kenneth D., 4,642,570, Cl. 324-366.000.

Duo-Therm Corporation, The: *See*—
Aldrich, Roger L.; Bodett, Peter C.; and Kelly, Richard E., 4,641,502, Cl. 62-244.000.

Duparc, Jacques: *See*—
Foch, Henri; and Duparc, Jacques, 4,642,553, Cl. 323-322.000.

Du Pont de Nemours, E. I., and Company: *See*—
Fusselman, David F., 4,641,902, Cl. 339-91.00R.

Dupoyet, Guy, to Compagnie des Transmissions Mecaniques Sedis. Transmission chain. 4,642,078, Cl. 474-206.000.

Dupuis, Aurelian J., Jr. Column construction. 4,641,467, Cl. 52-297.000.

Durbin, Roger: *See*—
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,641,907, Cl. 339-147.00R.

Dureux, Pierre J. C., to U.S. Philips Corporation. Television-type interlaced display device and digital oscilloscope comprising such a device. 4,642,623, Cl. 340-728.000.

Duri , Antonino, to Danieli & C. Officine Meccaniche SpA. Plant to form and cool coils. 4,641,512, Cl. 72-201.000.

Dynamit Nobel AG: *See*—
Groh, Reiner; Kotzsch, Hans-Joachim; Strebny, Hans-Gunther; and Vahlensieck, Hans-Joachim, 4,642,363, Cl. 556-471.000.
Piotrowski, Bernhard; Buning, Robert; Janser, Bernhard; and Lang, Egon, 4,642,262, Cl. 428-296.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, 4,642,369, Cl. 560-77.000.
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, 4,642,377, Cl. 562-483.000.

Dyonics, Inc.: *See*—
Prescott, Rochelle; and Leiner, Dennis C., 4,641,927, Cl. 350-413.000.

E. R. Squibb & Sons, Inc.: *See*—
Arnone, Ronald; and Ferguson, Keith, 4,642,107, Cl. 604-342.000.
Gordon, Eric M.; and Weller, Harold N., III, 4,642,315, Cl. 514-307.000.

Eades, Lindsay R.: *See*—
Batjer, John D.; Eades, Lindsay R.; Liedtke, Raymond J.; and Zebelman, Arthur M., 4,641,674, Cl. 134-138.000.

Eash, Matthew G.: *See*—
Hayes, Cecil E.; and Eash, Matthew G., 4,642,569, Cl. 324-318.000.

East, Judith A.: *See*—
Bondy, Daniel A.; East, Judith A.; and Rizzo, Christina M., 4,641,387, Cl. 5-508.000.

Eastern Company, The: *See*—
Pastva, John V., 4,641,865, Cl. 292-5.000.

Easthill, Stephen P., to U.S. Philips Corporation. Domestic electrical appliance. 4,642,753, Cl. 364-184.000.

Eastman Kodak Company: *See*—
Alkofer, James S., 4,642,683, Cl. 358-80.000.
Alkofer, James S., 4,642,684, Cl. 358-80.000.
Cok, David R., 4,642,678, Cl. 358-44.000.
Harvey, Frederick W.; and Johnson, Glenn W., 4,641,936, Cl. 354-212.000.
Hediger, Edwin A., 4,641,770, Cl. 226-23.000.

Rajoharison, Harivelo G.; and Roussel, Christian M., 4,642,359, Cl. 549-356.000.
Sparer, Steven J.; and Stephenson, Stanley W., 4,642,655, Cl. 346-76.0PH.
Wachenschwanz, David E.; and Jeffers, Frederick J., 4,642,718, Cl. 360-119.000.

Eaton, Bill; and Higgins, Marvin L., to Hewlett-Packard Company. Inverse shadowing in electroluminescent displays. 4,642,524, Cl. 315-169.300.

Eaton Corporation: *See*—
Bielinski, Ralph F.; Jaeschke, James R.; Krstic, Slobodan; Piber, Earl T.; and Theisen, Peter J., 4,642,481, Cl. 307-252.0UA.
Lade, Robert W.; Benjamin, James A.; and Schutten, Herman P., 4,642,665, Cl. 357-6.000.

Ebara Corporation: *See*—
Kataoka, Tadashi, 4,641,842, Cl. 277-83.000.

Ebara Research Ltd.: *See*—
Kataoka, Tadashi, 4,641,842, Cl. 277-83.000.

Ebino, Hiroshi: *See*—
Okimoto, Haruo; Mithui, Syuzi; and Ebino, Hiroshi, 4,641,619, Cl. 123-479.000.

Echavarrio, Fernando C. Zigzag and transport device for sewing machines. 4,641,593, Cl. 112-443.000.

Economics Laboratory, Inc.: *See*—
Majewski, Donna M.; and Morganson, Stephen A., 4,642,258, Cl. 428-68.000.

Egami, Tsuneyuki: *See*—
Miyaki, Masahiko; and Egami, Tsuneyuki, 4,642,773, Cl. 364-431.050.

Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Substituted dodecahydrotripheylenes, and decahydropyrrolo[1,2-f]phenanthridines as CNS agents. 4,642,373, Cl. 560-139.000.

Egner-Walter, Bruno; Schmid, Eckhardt; and Scholl, Wolfgang, to SWF Auto-Electric GmbH. Windshield wiper system. 4,641,389, Cl. 15-250.210.

Ehrhart, Leonard M., to Trailmobile Inc. Interlock system for a trailer and bogie. 4,641,846, Cl. 280-80.00B.

Eisenhauer, David P.: *See*—
Gerri, Edward J.; and Eisenhauer, David P., 4,642,634, Cl. 340-870.020.

Elbs, Peter; Jeserich, Wolfgang-Dieter; and Wehr, Rudolf, to BASF Aktiengesellschaft. Preparation of dry polycaprolactam granules. 4,642,211, Cl. 264-85.000.

Election Supplies Limited: *See*—
Ahmann, John E., 4,642,450, Cl. 235-50.00R.

Electrolux S.a.r.l.: *See*—
Muller, Fernand; Wannborg, Nils A.; and Billen, Kurt, 4,641,629, Cl. 126-6.000.

Elektroschmelzwerk Kempten GmbH: *See*—
Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, 4,642,135, Cl. 420-33.000.

Elenbaas, George H. Impulse mercury relay with magnetic interlock switch. 4,642,593, Cl. 335-52.000.

Elf France: *See*—
De Cortanze, Andre , 4,641,849, Cl. 280-270.000.

Eli Lilly and Company: *See*—
Beedle, Edward E.; and Robertson, David W., 4,642,379, Cl. 564-155.000.

Elia De Miguel, Maria-Fe; Miro Roig, Pedro; and Pares Olivet, Eulalia, to Compania Espanola de Petroleos, S.A. Process for producing thermostable alpha-amylases by culturing micro-organisms at elevated temperatures. 4,642,288, Cl. 435-99.000.

Elio Cavagna S.r.l.: *See*—
Cavagna, Elio, 4,641,575, Cl. 101-23.000.

Elliott, James O.; and Ricker, Dennis J., to General Motors Corporation. Electric motor speed controller supply circuit for a motor vehicle. 4,642,538, Cl. 318-139.000.

Ellis, Donald G., to University Patents, Inc. Probe swivel mechanism. 4,641,657, Cl. 128-630.000.

Ellis, Jack J. Bulk material sampling apparatus. 4,641,540, Cl. 73-863.530.

Elmec Corporation: *See*—
Kameya, Kazuo, 4,642,588, Cl. 333-139.000.

El-Sadi, Ashraf I., to Memorex Corporation. Track following servo for higher density disk files. 4,642,541, Cl. 318-616.000.

Emerson Electric Co.: *See*—
Phillips, Charles F., 4,642,074, Cl. 474-156.000.
Steiner, Robert E.; Cox, Karmen D.; Terpstra, Daniel A.; Metzger, James J., Jr.; and Plume, Steven H., 4,641,557, Cl. 83-71.000.

Emhart Industries, Inc.: *See*—
Shedigian, Vandos, 4,642,731, Cl. 361-319.000.
Weaver, Robert F., 4,641,422, Cl. 29-598.000.

EMI Limited: *See*—
LeMay, Christopher A. G., 4,642,540, Cl. 318-568.000.

EML Environmental Simulations Inc.: *See*—
Moffatt, Michael; LePage, James; and Englar, Gerald, 4,641,918, Cl. 350-125.000.

Emoto, Ikuo: *See*—
Wakita, Kazuto; Tsuchiya, Kazuo; Nagayasu, Isao; and Emoto, Ikuo, 4,642,260, Cl. 428-215.000.

Enamel Products & Plating Co.: *See*—
Anderson, William J.; Anderson, Wayne R.; and Robinson, Larry D., 4,641,571, Cl. 98-72.000.

Ende, Don S., to Miltope Corporation. Environmental conditioning and safety system for disk-type mass memories. 4,642,715, Cl. 360-97.000.

Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, to Hitachi, Ltd. Field emission type electron microscope using a multi-stage acceleration tube. 4,642,461, Cl. 250-311.000.

Endo, Keiji: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, 4,642,730, Cl. 361-315.000.

Endo, Kiyonobu, to Canon Kabushiki Kaisha. Information recording-reproducing method and apparatus. 4,642,703, Cl. 358-342.000.

Energiagazdalkodasi Intezet: *See*—
Balazs, Janos; Bocskor, Adam; Cseh, Otto; and Iring, Rezso, 4,641,607, Cl. 122-360.000.

Energy Conversion Devices, Inc.: *See*—
Ovshinsky, Stanford R., 4,642,413, Cl. 136-249.000.

Energy Sciences Inc.: *See*—
Tripp, Edwin P., III; Weisman, Jason; and Hissong, George, 4,642,244, Cl. 427-44.000.

Engel, Shlomo: *See*—
Zalmon, Seev W.; Engel, Shlomo; and Eyal, Joseph, 4,641,802, Cl. 244-3.280.

Engert, Klaus: *See*—
Boehm, Peter; Volz, Peter; Bischoff, Gilbert; Booten, Sigmund; Engert, Klaus; and Loew, Albin, 4,641,568, Cl. 91-369.00A.

England, Barry M.: *See*—
North, Walter L., Jr.; and England, Barry M., 4,642,094, Cl. 604-55.000.

Englar, Gerald: *See*—
Moffatt, Michael; LePage, James; and Englar, Gerald, 4,641,918, Cl. 350-125.000.

Engler, Max. Inclination measuring device. 4,641,434, Cl. 33-366.000.

English, George J.; and Chakrabarti, Kirti B., to GTE Products Corporation. Automobile headlight with combined heat and light shield. 4,642,514, Cl. 313-111.000.

Engstrom, Ake: *See*—
Kratz, Christer; Engstrom, Ake; and Karlsson, Goran, 4,642,427, Cl. 200-16.00C.

Enlow, David: *See*—
Dogadko, Peter; and Enlow, David, 4,641,618, Cl. 123-335.000.

Enokimoto, Akito: *See*—
Masuda, Tatsuo; Enokimoto, Akito; and Ohtsuka, Kazutoshi, 4,641,854, Cl. 280-701.000.

Enomoto, Hiroshi: *See*—
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, 4,642,307, Cl. 514-252.000.

Enviro-Spray Systems Incorporated: *See*—
Schmidt, Richard; and Pizzo, Joseph A., Sr., 4,641,485, Cl. 53-429.000.

Eppink, Jay M., to Hughes Tool Company. Connector housing. 4,641,717, Cl. 175-74.000.

Epstein, Howard D. Article of headwear convertible between hat and neckwarmer and method. 4,641,380, Cl. 2-209.100.

Erickson, Gary D.: *See*—
Dunkerton, Stephen H.; Reynolds, Gary R.; Chapman, Scott G.; and Erickson, Gary D., 4,642,633, Cl. 340-825.760.

Erickson, John J., to Sono-Tek Corporation. Ultrasonic transducer drive circuit. 4,642,581, Cl. 331-154.000.

Erickson, Robert W.: *See*—
De Stefanis, Vincent A.; Erickson, Robert W.; and Ranum, Peter M., 4,642,237, Cl. 426-64.000.

Erie, David G.: *See*—
Brownell, David J.; Christensen, Daniel C.; Erie, David G.; and Youngner, Daniel, 4,642,162, Cl. 156-643.000.

Ernst, Richard J.: *See*—
Blucher, William J.; Ernst, Richard J.; and Peterson, Francis C., 4,642,012, Cl. 411-371.000.

Erweka Apparatebau GmbH: *See*—
Schneider, Ortwin; and Georgitsis, Nikolaos, 4,641,534, Cl. 73-856.000.

Eskandry, Ezra D.: *See*—
Woolsey, Charles W.; Eskandry, Ezra D.; and Pinneo, George G., 4,642,640, Cl. 342-42.000.

Esso Resources Canada Limited: *See*—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.

Este, Grantley O.: *See*—
Suthers, Mark S.; Este, Grantley O.; Streater, Richard W.; and MacLaurin, Blair K., 4,642,507, Cl. 310-313.00B.

Etablissement Supervis: *See*—
Mettler, Karl, 4,641,546, Cl. 74-598.000.

Eto, Naonobu: *See*—
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.

Eurofarad-EED: *See*—
Dubuisson, Jacques; Le Gal, Pascal; and Boutterin, Rene , 4,641,425, Cl. 29-830.000.

Evans, William R.: *See*—
Schultz, Kenneth E.; and Evans, William R., 4,641,646, Cl. 128-207.140.

Ex-Cell-O Corporation: *See*—
Spisak, Anthony F., 4,641,744, Cl. 198-813.000.

Exploration Logging, Inc.: *See*—
Umeda, Takato, 4,642,800, Cl. 367-85.000.

Exxon Chemical Patents Inc.: *See*—
Young, David A., 4,642,388, Cl. 568-454.000.

Exxon Research and Engineering Company: *See*—
Tiedje, Thomas J.; and Abeles, Benjamin, 4,642,144, Cl. 148-175.000.

Eyal, Joseph: *See*—
Zalmon, Seev W.; Engel, Shlomo; and Eyal, Joseph, 4,641,802, Cl. 244-3.280.
F.I.C.I. Finanziaria Industriale Commerciale Immobiliare S.p.A.: *See*—
Castiglioni, Giovanni P., 4,641,559, Cl. 83-333.000.
F. L. Smithe Machine Company, Inc.: *See*—
Helm, Herbert W., 4,642,085, Cl. 493-222.000.
Fa. Wilhelm Barenschee: *See*—
Guthling, Klaus; Meyer, Adolf J.; and Miethe, Manfred, 4,641,576, Cl. 101-415.100.
Fabricated Steel Products, division of Indal Limited: *See*—
Andry, Gordon J., 4,641,732, Cl. 188-379.000.
Faigl, Ferenc: *See*—
Acs, Maria; Faigl, Ferenc; and Fogassy, Elemer, 4,642,205, Cl. 260-501.170.
Failor, Raymond A.: *See*—
Peters, Gerald; Hayton, Eugene P.; and Failor, Raymond A., 4,641,385, Cl. 5-82.00R.
Fair, Delbert W.: *See*—
Cole, Jack H.; and Fair, Delbert W., 4,641,725, Cl. 181-119.000.
Fanuc Ltd.: *See*—
Kishi, Hajimu; Seki, Masaki; and Takegahara, Takashi, 4,642,754, Cl. 364-191.000.
Fanuc Ltd: *See*—
Ishikawa, Yasushi; and Fukuroi, Takeshi, 4,642,044, Cl. 425-593.000.
Farber, Heinrich: *See*—
Muller, Jurgen; Kastl, Alfons; and Farber, Heinrich, 4,641,940, Cl. 354-322.000.
Farcasiu, Malvina: *See*—
Adams, Priscilla L.; and Farcasiu, Malvina, 4,642,176, Cl. 208-111.000.
Farchemia S.p.A.: *See*—
Finotto, Martino, 4,642,367, Cl. 560-40.000.
Farr, James B., to Tecumseh Products Company. Alternator-compressor construction. 4,642,031, Cl. 417-223.000.
Fasco Controls Corporation: *See*—
Ring, Thomas F., 4,642,432, Cl. 200-155.00R.
Fast Heat Element Manufacturing Co., Inc.: *See*—
Crandell, Walter R., 4,641,423, Cl. 29-611.000.
Fast, Raymond D.; and Murray, Brian A., to Microtel Limited. Method of locking a master oscillator in a narrowband phase-lock loop to a pilot tone. 4,642,576, Cl. 331-1.00R.
Faulkner, W. Harrison, III, to Slautterback Corporation. Viscous thermoplastic melting and dispensing unit. 4,641,764, Cl. 222-146.200.
Fawzi, Mahdi B.; and Taylor, Anne K., to Warner-Lambert Company. Parenteral phenytoin preparations. 4,642,316, Cl. 514-398.000.
Fazekas, Peter, to Siemens Aktiengesellschaft. Method for the registration and representation of signals in the interior of integrated circuits by considering edge steepness and apparatus for implementing the method. 4,642,566, Cl. 324-158.00R.
Fearnhead, Ivan J., to Unaform Inc. Papermakers fabric having a tight bottom weft geometry. 4,642,261, Cl. 428-225.000.
Fearon, William W.; and Macy, Arnel M., to Peabody Noise Control, Inc. Composite structure and method of manufacturing it. 4,641,726, Cl. 181-292.000.
Feher, Stanley H.: *See*—
Cline, J. Douglas; Wilson, James A.; Feher, Stanley H.; and Ward, George D., 4,642,775, Cl. 364-443.000.
Feifel, Winfried M., to Boeing Company, The. Airfoil. 4,641,796, Cl. 244-35.00R.
Fenerty, Stanley W. Wood holder. 4,641,822, Cl. 269-296.000.
Fenn, Ronald L., to AMCA International Corporation. Automated in-process pipe storage and retrieval system. 4,642,017, Cl. 414-348.000.
Ferag AG: *See*—
Honegger, Werner, 4,641,795, Cl. 242-59.000.
Ferguson, Arthur R., to Outboard Marine Corporation. Marine propulsion device oil cooling arrangement. 4,641,615, Cl. 123-196.0AB.
Ferguson, Keith: *See*—
Arnone, Ronald; and Ferguson, Keith, 4,642,107, Cl. 604-342.000.
Ferioli, Filippo. Multiuse portable equipment for driving rotating tools, rotating percussion tools and percussion tools. 4,641,714, Cl. 173-109.000.
Ferlan, Stephen J.: *See*—
Shallenberger, John M.; and Ferlan, Stephen J., 4,641,409, Cl. 29-401.100.
Ferranti plc: *See*—
McKeand, Alexander W., 4,642,542, Cl. 318-636.000.
Ferrar, Andrew N.; and Jones, Arthur N., to Transparent Paper PLC. Packaging of fresh meat. 4,642,239, Cl. 426-396.000.
Fichtel & Sachs AG: *See*—
Forster, Andreas, 4,641,736, Cl. 192-89.00B.
Filmer, Alan M., to Development Finance Corporation of New Zealand, Limited. Display units. 4,641,442, Cl. 40-219.000.
Finotto, Martino, to Farchemia S.p.A. Process for the preparation of alfa-L-aspartyl-L-phenyl-alanine alkyl esters. 4,642,367, Cl. 560-40.000.
Fisanick, William, to American Chemical Society. Storage and retrieval of generic chemical structure representations. 4,642,762, Cl. 364-300.000.
Fischer, Artur. Wall plug. 4,642,009, Cl. 411-38.000.
Fischer, Dietmar; and Kublick, Christian, to Siemens Aktiengesellschaft. Uninterruptible power supply. 4,642,475, Cl. 307-66.000.
Fischer, Gregory E.: *See*—
Landers, Jerry L.; and Fischer, Gregory E., 4,641,763, Cl. 222-129.100.
Fitzgerald, Mark: *See*—
Heitzmann, Richard F.; Fitzgerald, Mark; and Sawyer, James L., 4,642,137, Cl. 106-85.000.
Fitzmayer, Louis H.; Staats, James E.; and Miller, Matthew S., to General Electric Company. Rotating slot antenna arrangement for microwave oven. 4,642,435, Cl. 219-10.55F.
Flagan, Richard C.; and Alam, Mohammed K., to California Institute of Technology. Reactor for producing large particles of materials from gases. 4,642,227, Cl. 423-349.000.
Fleischer, Glen R.: *See*—
Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., 4,641,381, Cl. 2-400.000.
Flower, Wallace C. Dynamic vibration attenuator utilizing inertial fluid. 4,641,808, Cl. 248-550.000.
Flueli, Adolf; Oswald, Heinz; and Schefer, Kurt, to Rieter Machine Works Limited. Thread winding machine and method of performing automatic changeover of winding of a thread. 4,641,793, Cl. 242-18.0PW.
FMC Corporation: *See*—
Darecchio, Andrea, 4,641,487, Cl. 53-435.000.
Foch, Henri; and Duparc, Jacques, to Jeumont-Schneider Corporation. Commutator containing a semiconductor with unidirectional current and bidirectional voltage, and with controlled interruption and automatic ignition. 4,642,553, Cl. 323-322.000.
Fogassy, Elemer: *See*—
Acs, Maria; Faigl, Ferenc; and Fogassy, Elemer, 4,642,205, Cl. 260-501.170.
Fokker B.V.: *See*—
De Haan, Frans W.; Wynia, Jan; and Zwanenburg, Rob, 4,641,798, Cl. 244-173.000.
Folcher, Gerard: *See*—
Arnaudet, Lucile; and Folcher, Gerard, 4,642,337, Cl. 534-11.000.
Folkers, Karl; Jie-Cheng, Xu; and Bowers, Cyril Y., to Board of Regents, The University of Texas System, The. Effective hormonal peptides: D-3-Pal^6-LHRH. 4,642,332, Cl. 530-313.000.
Forbes, Richard L., II, to Xerox Corporation. Development system. 4,641,946, Cl. 355-3.0DD.
Ford Motor Company: *See*—
Hamburg, Douglas R., 4,641,623, Cl. 123-518.000.
Reichenbach, Thomas G., 4,641,856, Cl. 280-772.000.
Wade, Wallace R., 4,641,496, Cl. 60-274.000.
Forges Stephanoises S.A.: *See*—
Heyraud, Georges, 4,641,538, Cl. 73-862.260.
Forster, Andreas, to Fichtel & Sachs AG. Friction clutch. 4,641,736, Cl. 192-89.00B.
Foseco International Limited: *See*—
Schwanke, Lavern H., 4,642,777, Cl. 364-476.000.
Foster Wheeler Energy Corporation: *See*—
Krawchuk, Myron; and Spoganetz, Joseph C., 4,641,774, Cl. 228-2.500.
Foster, William R., to Targa Electronics Systems Inc. Bubble memory disk emulation system. 4,642,759, Cl. 364-200.000.
Fourtet, Jean P.: *See*—
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.
Fowler, Wayne D., to Adams-Russell. Low SWR high power multiple waveguide junction. 4,642,586, Cl. 333-122.000.
Fox, Mark S.: *See*—
Kemper, Christian T.; Lowenfeld, Simon; and Fox, Mark S., 4,642,782, Cl. 364-550.000.
Fox, Steve A., to Normag Corporation. Extruder drivingly connected to gear pump. 4,642,040, Cl. 425-204.000.
Fradin, Louis: *See*—
Plaquin, Bernard A.; and Fradin, Louis, 4,641,410, Cl. 29-407.000.
Franczyk, Thad S.: *See*—
Zinnen, Hermann A.; and Franczyk, Thad S., 4,642,397, Cl. 568-934.000.
Frazzell, Michael E.; and Snyder, Richard H., to Brunswick Corporation. Shock absorbing propeller. 4,642,057, Cl. 440-52.000.
Frear, David L.: *See*—
Gallusser, David O.; and Frear, David L., 4,641,811, Cl. 249-122.000.
Freeman, Michael H., to Pilkington P.E. Limited. Ophthalmic lens with diffractive power. 4,641,934, Cl. 351-159.000.
Freeman, Michael H., to Pilkington P.E. Limited. Artificial eye lenses. 4,642,112, Cl. 623-6.000.
Freeman, Thomas R.: *See*—
Orr, William L.; Doshi, Pratap K.; Mildrum, Claude M.; and Freeman, Thomas R., 4,642,216, Cl. 376-327.000.
Frenger, Paul: *See*—
Alexander, William B.; and Frenger, Paul, 4,642,783, Cl. 364-551.000.
Friebe, Karl-Heinz; Heinz, Karl-Otto; and Scholten, Werner, to Robert Bosch GmbH. Arrangement for feeding fuel from supply tank. 4,642,030, Cl. 417-203.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Coenen, Hubert; and Hagen, Rainer, 4,642,401, Cl. 585-241.000.
Friedrich, Marju L.: *See*—
Schoenberg, Andrew J.; and Friedrich, Marju L., 4,642,321, Cl. 523-400.000.
Friend, Beverly A.; Gierhart, Dennis L.; and O'Brien, Judy K., to Ralston Purina Company. Process for reducing the level of objection-

able flavors in vegetable protein by microorganism contact. 4,642,236, Cl. 426-44.000.

Frisbie, Jeffrey S.: *See—*
Samson, Wilfred J.; and Frisbie, Jeffrey S., 4,641,654, Cl. 128-344.000.

Fritchman, Jack F., to White Consolidated Industries, Inc. Reed valve for refrigeration compressor. 4,642,037, Cl. 417-571.000.

Fritzke, Hans W.: *See—*
Schultheiss, Georg; von Minden, Charles; and Fritzke, Hans W., 4,642,300, Cl. 501-124.000.

Frohlich, Robert T.: *See—*
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,641,471, Cl. 52-361.000.
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,641,472, Cl. 52-361.000.

Fronduti, Domenico, to Cartotecnica Tifernate S.p.A. Prismatic container obtained from a flat cardboard blank with a diaphragm end closure device formed by stamping a part of the flat blank. 4,641,777, Cl. 229-110.000.

Fruhwald, John M., to Bacharach, Inc. Controlled-potential bias circuit for electrochemical cells. 4,642,172, Cl. 204-231.000.

Fu-Chi Metalic Engineering Co. Ltd.: *See—*
Yu, Li K., 4,641,815, Cl. 254-93.00H.

Fucito, Dermot T.; Paul, James E.; and Markovic, Milan, to Northern Telecom Limited. Noise reduction in companding arrangements. 4,642,583, Cl. 333-14.000.

Fuji Electric Co., Ltd.: *See—*
Ichikawa, Haruo; Chida, Fumio; Akiike, Katsumi; and Izumi, Kanichi, 4,642,598, Cl. 337-82.000.
Tomita, Hiroo, 4,642,483, Cl. 307-300.000.

Fuji Photo Film Co., Ltd.: *See—*
Aagano, Toshitaka; and Takasaki, Yoshimi, 4,642,462, Cl. 250-327.200.
Kakimi, Fujio; and Mikami, Takeshi, 4,642,281, Cl. 430-138.000.
Ohta, Takahiro; Inuiya, Masafumi; Kobayashi, Kazuyoshi; and Murakami, Takashi, 4,642,700, Cl. 358-285.000.
Takahashi, Hiroshi; Narutomi, Yasuhisa; Aotani, Yoshimasa; and Shiba, Keisuke, 4,642,283, Cl. 430-303.000.
Terashita, Takaaki, 4,641,959, Cl. 355-77.000.

Fuji Photo Optical Co., Ltd.: *See—*
Matsuda, Shinichi; and Seki, Kazuhisa, 4,642,717, Cl. 360-105.000.
Umezu, Takao; Ishiguro, Minoru; and Nishizawa, Tetsuo, 4,641,935, Cl. 354-173.110.

Fuji Seiko Limited: *See—*
Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.

Fujihara, Toshihisa: *See—*
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.

Fujioka, Akira: *See—*
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.

Fujitsu Limited: *See—*
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Uriuhara, Makoto, 4,642,771, Cl. 364-424.100.
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,642,148, Cl. 156-89.000.
Matsumoto, Norio; Okuda, Shinya; Ohkuma, Osamu; and Seino, Mituyoshi, 4,641,980, Cl. 400-120.000.
Murakami, Jyoji; and Yamada, Kenzi, 4,642,609, Cl. 340-347.0AD.
Shirasaki, Masataka, 4,641,926, Cl. 350-394.000.

Fujiwara, Osamu: *See—*
Tsutsumi, Masaru; Hagino, Hideo; Fujiwara, Osamu; and Goto, Hitoshi, 4,642,274, Cl. 429-35.000.

Fukazawa, Takao: *See—*
Ito, Tadashi; Jinnai, Koichiro; Koike, Takahisa; Murai, Toshiharu; Fukazawa, Takao; and Ishima, Kazumi, 4,642,653, Cl. 346-1.100.

Fukuda, Kanehiro: *See—*
Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, 4,642,659, Cl. 346-76.0PH.

Fukuda, Kazumasa: *See—*
Morita, Haruyuki; Yoshinari, Jiro; and Fukuda, Kazumasa, 4,642,270, Cl. 428-621.000.

Fukui, Kunisuke: *See—*
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 4,642,269, Cl. 428-516.000.

Fukui Sinta Kabushiki Kaisha: *See—*
Hattori, Torao; Nishimura, Minoru; and Goto, Masaki, 4,642,077, Cl. 474-201.000.

Fukui, Yutaka: *See—*
Mori, Takanobu; Fukui, Yutaka; Kashimura, Tetsuo; and Yanai, Yoshimi, 4,642,495, Cl. 310-52.000.

Fukunaga, Mitsuo, to Murata Kikai Kabushiki Kaisha. Lubricant applicator for two-for-one twister. 4,641,493, Cl. 57-296.000.

Fukuoka, Tatsuhiko: *See—*
Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.

Fukuroi, Takeshi: *See—*
Ishikawa, Yasushi; and Fukuroi, Takeshi, 4,642,044, Cl. 425-593.000.

Fukushima, Masao: *See—*
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinor, 4,641,951, Cl. 355-7.000.

Fukushima, Noburu; Yoshino, Hisashi; and Nomura, Shunji, to Kabushiki Kaisha Toshiba. PTC ceramic composition. 4,642,136, Cl. 75-234.000.

Fuller, Timothy J.: *See—*
Alvino, William M.; Fuller, Timothy J.; Cargnel, Louis A.; and Scala, Luciano C., 4,642,170, Cl. 204-181.400.

Funahata, Katuyuki: *See—*
Nagae, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, 4,641,924, Cl. 350-339.00R.

Funaki, Kinsaku: *See—*
Koyase, Hiroyasu; Funaki, Kinsaku; and Morita, Atsuo, 4,642,138, Cl. 134-22.180.

Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, to Nippon Sheet Glass Co., Ltd.; and Sumitomo Chemical Co., Limited. Non-fogging coating composition and a shaped article coated therewith. 4,642,266, Cl. 428-412.000.

Funck, Ronald; and Stevance, Jean, to Thomson-CSF. Slot-line switching and limiting device for operation at microwave frequencies. 4,642,584, Cl. 333-17.00L.

Funk, Gary L.; Terhune, Robert D.; Kania, Cheryl C.; and Kallenberger, Robert H., to Phillips Petroleum Company. Method and means of control for multi-source feedstock distribution system including optimization of supplies. 4,642,766, Cl. 364-402.000.

Furuhata, Takashi; Mohri, Katsuo; and Konishi, Katsuo, to Hitachi, Ltd. Magnetic recording and reproducing apparatus. 4,642,708, Cl. 360-77.000.

Furumura, Takashi; and Ohba, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Control circuit for driving step motor. 4,642,544, Cl. 318-696.000.

Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, to Casio Computer Co., Ltd. Television video signal A/D converter apparatus. 4,642,693, Cl. 358-236.000.

Fuse, Takahiro: *See—*
Yamagishi, Koji; Fuse, Takahiro; Kawamura, Masao; and Matsui, Shinichi, 4,642,694, Cl. 358-236.000.

Fusselman, David F., to Du Pont de Nemours, E. I., and Company. Shielded connector with latches. 4,641,902, Cl. 339-91.00R.

Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, to Taiho Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate type compressor having a center cavity in surface of piston shoe. 4,641,570, Cl. 92-71.000.

GA Technologies Inc.: *See—*
Creedon, Richard L., 4,641,567, Cl. 89-8.000.

Gabrielidis, Pericles. Tennis racket with racket having adjustable length handle. 4,641,838, Cl. 273-73.00J.

Gailiunas, Ernest A. Ski pole hand grip. 4,641,857, Cl. 280-821.000.

Galiasso, Roberto: *See—*
Morales, Alfredo L.; Galiasso, Roberto; Carrasquel, Angel R.; and Salazar, Jose A., 4,642,179, Cl. 208-217.000.

Gallagher, Hayden E.: *See—*
Harvey, Robin J.; Gallagher, Hayden E.; and Schumacher, Robert W., 4,642,522, Cl. 315-111.310.

Gallusser, David O.; and Frear, David L., to Allied Corp. Electrical connector having a molded anti-decoupling mechanism. 4,641,811, Cl. 249-122.000.

Gallusser, David O.; and Punako, Stephen, to Allied Corp. Multi-part electrical connector assembly. 4,641,899, Cl. 339-59.00M.

Ganner, Erwin. Fitting for releasably joining two structural components. 4,641,988, Cl. 403-245.000.

Gardiner, Randy A. Rotationally molded nozzle liner and method for its installation. 4,641,862, Cl. 285-39.000.

Garr, Ernest J. Apparatus and method for wrapping packages with heat shrinkable material. 4,641,488, Cl. 53-442.000.

Garrett Corporation, The: *See—*
Green, C. Brad; Dobson, William; and Abel, Stephen G., 4,641,405, Cl. 29-157.10R.

Garrou, Philip E.: *See—*
Wood, Clayton D.; Garrou, Philip E.; Kohatsu, Iwao; and Gleason, Edward F., 4,642,302, Cl. 502-332.000.

Garwin, Richard L.; and Levine, James L., to International Business Machines Corporation. Calibration of a scanning light interrupt type of data input interface. 4,642,422, Cl. 178-18.000.

Gasparaitis, Bernard V.; and Richardson, C. Patrick, to Motorola, Inc. Liquid crystal display assembly with phosphorescent backlighting. 4,641,925, Cl. 350-345.000.

Gassmann, Gerhard G., to ITT Industries, Inc. Superheterodyne receiver. 4,642,675, Cl. 358-21.00R.

Gaston, Charles A.: *See—*
Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinckney, Warren J.; and Wilson, Alan D., 4,642,438, Cl. 219-121.00L.

Gaz de France: *See—*
Louis, Raymond, 4,642,049, Cl. 432-223.000.

Gebeke, Charles D.; and Weavers, Mark W., to Minnesota Mining and Manufacturing Company. Spring mechanism for lid of video cassette. 4,642,722, Cl. 360-132.000.

Gebrueder Mueller Apparatebau GmbH & Co. KG: *See—*
Mueller, Fritz; and Pienta, Lothar, 4,641,533, Cl. 73-706.000.

Geertsema, Eise B.: *See*—
Bouman, Anton J.; and Geertsema, Eise B., 4,642,520, Cl. 315-73.000.
Gehring, Fritz, to Lindauer Dornier Gesellschaft mbH. Weft thread braking mechanism having a stepwise controllable braking effect. 4,641,688, Cl. 139-450.000.
Geiger, Erich; and Kaaden, Jurgen, to Deutsche Thomson-Brandt GmbH. Magnetic tape video recorder with a one head drum. 4,642,707, Cl. 360-76.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Driveline coupling with safety interlock mechanism latchable in the open position. 4,641,990, Cl. 403-317.000.
Geisthoff, Hubert; and Buthe, Theo, to Jean Walterscheid GmbH. Protective bellows assembly with plugged lubricating aperture. 4,642,067, Cl. 464-175.000.
General Electric Company: *See*—
Archibald, James B.; and Rink, Frederick J., Jr., 4,642,498, Cl. 310-71.000.
Aycock, David F.; and Ting, Sai-Pei, 4,642,358, Cl. 549-245.000.
Bergman, Charles T., 4,641,823, Cl. 269-322.000.
Boyd, John H., Jr., 4,642,497, Cl. 310-68.00R.
Boyd, John H., Jr.; and Muller, Alexander, 4,642,536, Cl. 318-254.000.
Cohn, David W., 4,642,741, Cl. 362-320.000.
Fitzmayer, Louis H.; Staats, James E.; and Miller, Matthew S., 4,642,435, Cl. 219-10.55F.
Hayes, Cecil E.; and Eash, Matthew G., 4,642,569, Cl. 324-318.000.
Hodsdon, Roy F., 4,642,627, Cl. 340-765.000.
Hodsdon, Roy F.; and Bell, Robert K., 4,642,735, Cl. 361-424.000.
Lemmers, Robert E.; Safran, Frank; and Brussee, Warren T., 4,641,966, Cl. 356-237.000.
MacMinn, Stephen R., 4,642,543, Cl. 318-696.000.
Steigerwald, Robert L.; and Kornrumpf, William P., 4,642,745, Cl. 363-37.000.
Taub, Alan I.; Huang, Shyh-Chin; and Chang, Keh-Minn, 4,642,139, Cl. 148-3.000.
Thomas, Charles E.; Lee, Minyoung; Bedard, James F.; and Hayashi, Steven R., 4,642,617, Cl. 340-680.000.
True, Thomas T., 4,642,740, Cl. 362-268.000.
Young, Glen C., 4,642,537, Cl. 318-254.000.
General Foods Corporation: *See*—
Barnett, Ronald E.; and Yarger, Ronald G., 4,642,240, Cl. 426-538.000.
General Instrument Corporation: *See*—
Stevens, Gerald S., Jr.; Sapitowicz, Thomas P.; and Davis, Edward D., 4,642,660, Cl. 346-140.00R.
General Motors Corporation: *See*—
Beer, Wilhelm, 4,641,809, Cl. 248-559.000.
Carpenter, Keith H.; Miller, Jon E.; and Murphy, John W., 4,642,502, Cl. 310-156.000.
Cedoz, Robert W., 4,642,029, Cl. 416-129.000.
Elliott, James O.; and Ricker, Dennis J., 4,642,538, Cl. 318-139.000.
Pavlak, John J.; and Nestor, Charles R., 4,641,911, Cl. 339-276.00T.
Pennington, Edward J., 4,642,446, Cl. 219-121.0LD.
Voss, Karl D.; Datte, Mark A.; and Ruff, Gary F., 4,641,703, Cl. 164-255.000.
General Signal Corporation: *See*—
Sutton, Gary, 4,642,019, Cl. 414-525.00R.
Generale de Transport et d'Industrie: *See*—
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.
Geneva Group of Companies, Inc.: *See*—
De brey, Robert J., 4,641,391, Cl. 15-104.940.
Georg Fischer Aktiengesellschaft: *See*—
Thalmann, Alfred; Lehmann, Ernesto; Roth, Emil; and Gerber, Walter, 4,642,154, Cl. 156-272.200.
George, John B., to RCA Corporation. Kinescope driver with kinescope current sensing circuit. 4,642,696, Cl. 358-243.000.
Georgens, Harold H.; and Christensen, Dean L., to Data Electronics, Inc. Magnetic tape cartridge with increased data packing density. 4,642,721, Cl. 360-132.000.
Georgitsis, Nikolaos: *See*—
Schneider, Ortwin; and Georgitsis, Nikolaos, 4,641,534, Cl. 73-856.000.
Georgopoulos, Panayotis, to Northwestern University. EXAFS spectrometer. 4,642,811, Cl. 378-53.000.
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Markovitch, Peter; and Klepesch, Philip H., 4,641,498, Cl. 60-641.200.
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Gerri, Edward J.; and Eisenhauer, David P., to NCR Corporation. Optical encoder. 4,642,634, Cl. 340-870.020.
Gerwick, B. Clifford, III: *See*—
Rogers, Richard B.; and Gerwick, B. Clifford, III, 4,642,338, Cl. 534-558.000.
Gessalin, Jean. Helmet fastening device. 4,641,382, Cl. 2-421.000.
Gessner, Anton: *See*—
Osthoff, Walter; Hohenester, Otmar; and Gessner, Anton, 4,641,403, Cl. 26-3.000.
Getrag Getriebe-und Zahnradfabrik GmbH: *See*—
Muller, Erich; Gunter, Ruhle; and Stocker, Wilhelm, 4,641,734, Cl. 192-53.00F.
Gettig, William A. Injector assembly. 4,642,103, Cl. 604-234.000.
Ghassemi, Farhad: *See*—
Powers, Maston L.; Dodson, Christopher J.; Moore, John S.; and Ghassemi, Farhad, 4,641,709, Cl. 166-252.000.
Gierhart, Dennis L.: *See*—
Friend, Beverly A.; Gierhart, Dennis L.; and O'Brien, Judy K., 4,642,236, Cl. 426-44.000.
Gietman, Peter J., Jr., to Custom Machinery Design, Inc. Plastic bag making machine. 4,642,084, Cl. 493-190.000.
Giles, Dale J.; and Mercer, Garry C. Tire bead breaking device. 4,641,699, Cl. 157-1.170.
Gill, Geoffrey Y.; Hunter, Paul H.; and Venlet, Gerard W. Spade drill with replaceable cutting-insert carrier. 4,642,001, Cl. 408-59.000.
Gillette, Douglas. Space toy construction kit. 4,642,063, Cl. 446-94.000.
Gillingham, Gary D.; and Metcalf, Jeffrey D., to Sundstrand Corporation. Bi-directional overtravel stop. 4,641,737, Cl. 192-141.000.
Gilpin, Jo A.: *See*—
Kirchhoff, Robert A.; Schrock, Alan; and Gilpin, Jo A., 4,642,329, Cl. 526-284.000.
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Batchman, Theodore E.; and Gimpelson, George E., 4,642,558, Cl. 324-72.500.
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Gitman, Grigory M., to American Combustion, Inc. Method and apparatus for flame generation and utilization of the combustion products for heating, melting and refining. 4,642,047, Cl. 432-13.000.
Gjertsen, Robert K.: *See*—
Wilson, John F.; Gjertsen, Robert K.; and Cerni, Samuel, 4,642,217, Cl. 376-451.000.
GKSS Forschungszentrum Geesthacht GmbH: *See*—
Schultheiss, Georg; von Minden, Charles; and Fritzke, Hans W., 4,642,300, Cl. 501-124.000.
Glass, Alastair M., to AT&T Bell Laboratories. System and process for optical processing of information. 4,642,799, Cl. 365-114.000.
Gleason, Edward F.: *See*—
Wood, Clayton D.; Garrou, Philip E.; Kohatsu, Iwao; and Gleason, Edward F., 4,642,302, Cl. 502-332.000.
Gleason, Kimberly R.: *See*—
Vetanen, William A.; Gleason, Kimberly R.; and Beers, Irene G., 4,642,259, Cl. 428-137.000.
Glengary, Philip J.: *See*—
Grzanowski, Edmund S., Jr.; and Glengary, Philip J., 4,642,477, Cl. 307-113.000.
Glesmann, Herbert C.; and Thomas, Ronald G., to Remco. Auxiliary lubrication pump apparatus. 4,642,604, Cl. 340-60.000.
Glodis, Paul F.; and Lenhan, Terrence A., to AT&T Bell Laboratories. Single mode optical fiber. 4,641,917, Cl. 350-96.330.
Glushko, Mikhail F.; Skalatsky, Viktor K.; and Zakhryamin, Anatoly D. Rope-twisting machine for making ropes. 4,641,492, Cl. 57-9.000.
GMI Engineering & Management Institute: *See*—
Christenson, Robert J., 4,641,835, Cl. 272-87.000.
Gold, Raymond D.; and Riegel, Leo W., to Deere & Company. Weld fixture mounting. 4,641,820, Cl. 269-58.000.
Goldberg, Harris A.; Kalnin, Ilmar L.; Williams, Clyde C.; and Spain, Ian L., to Celanese Corporation. Electrical device made of partially pryolyzed polymer. 4,642,664, Cl. 357-2.000.
Golden Valley Microwave Foods Inc.: *See*—
Cox, David H.; Andreas, David W.; and Watkins, James D., 4,642,434, Cl. 219-10.55E.
Goldenberg, Tsvi. Excimer laser delivery system, angioscope and angioplasty system incorporating the delivery system and angioscope. 4,641,912, Cl. 350-96.100.
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, to Bayer Aktiengesellschaft. Circulation-active tetrahydrothienopyridines. 4,642,310, Cl. 514-301.000.
Goldsmith, Claude A.: *See*—
Lavelle, Michael G.; Goldsmith, Claude A.; and Kingsbury, Allin D., 4,642,794, Cl. 364-900.000.
Goll, Werner, to Solvay & Cie, Societe Anonyme. Clear lacquer based on polyvinylidene fluoride and a process for the coating of metallic surfaces. 4,642,249, Cl. 427-388.500.
Gonda, Michihiro: *See*—
Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikkawa, Katsumasa, 4,642,663, Cl. 346-221.000.
Gonda, Tsunemi: *See*—
Mitani, Kiyoharu; Morohashi, Kazuo; Yamada, Kenji; Gonda, Tsunemi; and Mizutani, Hideo, 4,641,964, Cl. 356-124.000.
Goodwin, Peter A., to Prime Computer, Inc. Method and apparatus for detection of AC power failure conditions. 4,642,616, Cl. 340-654.000.
Goodyear Tire & Rubber Company, The: *See*—
Lindner, Daniel J., 4,641,695, Cl. 152-209.00A.
Gorbunov, Boris N.: *See*—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov,

Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

Gordon, Charles, to Kal Kan Foods, Inc. Animal litter and method of preparation. 4,641,605, Cl. 119-1.000.

Gordon, Eric M.; and Weller, Harold N., III, to E. R. Squibb & Sons, Inc. Carboxy and substituted carboxy alkanoyl and cycloalkanoyl peptides. 4,642,315, Cl. 514-307.000.

Gorman, Jeremy W. Modification for heat exchangers incorporating a helically shaped blade and pin shaped support member. 4,641,705, Cl. 165-85.000.

Goro S.A.: *See*—
Schick, Jean-Francois, 4,641,398, Cl. 24-33.00R.

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Tsutsumi, Masaru; Hagino, Hideo; Fujiwara, Osamu; and Goto, Hitoshi, 4,642,274, Cl. 429-35.000.

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Hattori, Torao; Nishimura, Minoru; and Goto, Masaki, 4,642,077, Cl. 474-201.000.

Goto, Taizan: *See*—
Miyazaki, Yoshihiko; Goto, Taizan; Komiyama, Yoshizo; and Iwata, Kotei, 4,641,603, Cl. 118-724.000.

Gottschlich, Hermann: *See*—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Grabmaier, Josef: *See*—
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Grabowski geb. Marszalek, Danuta: *See*—
Mennemann, Karl; and Grabowski geb. Marszalek, Danuta, 4,642,297, Cl. 501-78.000.

Graham, Kingsley F.: *See*—
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Grandy, Mark E., to Baird Corporation. Mobile spectrometric apparatus. 4,641,968, Cl. 356-313.000.

Grecksch, Hans; Schwalm, Hans-Werner; and Thomalla, Johannes, to W. Schlafhorst & Co. Bobbin tube magazine. 4,641,740, Cl. 198-487.100.

Green, C. Brad; Dobson, William; and Abel, Stephen G., to Garrett Corporation, The. Servo system method and apparatus servo valve apparatus therefor and method of making same. 4,641,405, Cl. 29-157.10R.

Green, Robin J.: *See*—
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., 4,642,198, Cl. 252-94.000.

Greenberg, Ronald: *See*—
Lauer, John F.; Greenberg, Ronald; and Van De Walle, Raymond A., 4,641,997, Cl. 405-24.000.

Greenspon, Arnold J.: *See*—
Walinsky, Paul; Rosen, Arye; and Greenspon, Arnold J., 4,641,649, Cl. 128-303.100.

Greenwood, C. J., to Leyland Vehicles Limited. Drive line for a tracklaying vehicle. 4,641,548, Cl. 74-691.000.

Greer, Leland H. Resealing skin bandage. 4,641,643, Cl. 128-156.000.

Grenzer, Leslie J. Portaging device. 4,641,874, Cl. 294-15.000.

Greschner, Johann; Schwerdt, Friedrich W.; and Trumpp, Hans J., to International Business Machines Corporation. Method of making adhesive metal layers on substrates of synthetic material and device produced thereby. 4,642,163, Cl. 156-643.000.

Gresse, Herve R.; and Carn, Annick R., to Compagnie de Materiel de Micrographie "C.M.M." . Stereoscopic viewer for aerial photographs. 4,641,919, Cl. 350-138.000.

Griggs, Calvin. Compression screw assembly. 4,641,640, Cl. 128-92.0YV.

Groh, Reiner; Kotzsch, Hans-Joachim; Strebny, Hans-Gunther; and Vahlensieck, Hans-Joachim, to Dynamit Nobel AG. Method of preparing trialkyl organo-oxysilanes. 4,642,363, Cl. 556-471.000.

Gross, Rainer: *See*—
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,642,310, Cl. 514-301.000.

Grothe, Horst, to SMS Schloemann-Siemag AG. Flat jet nozzle for coolant spraying on a continuously conveyed billet. 4,641,785, Cl. 239-597.000.

Groves, William A.; Snook, Matthew L.; and Browen, Rodney, to Hewlett-Packard Company. Circuit tester having on-the-fly comparison of actual and expected signals on test pins and improved homing capability. 4,642,561, Cl. 324-73.00R.

Grund, Andreas: *See*—
Prescher, Guenter; Grund, Andreas; Petsch, Heinrich; and Boehme, Georg, 4,642,387, Cl. 568-446.000.

Grunert, Kurt A.: *See*—
Matsko, Joseph J.; Grunert, Kurt A.; and Terhorst, Bruce R., 4,642,726, Cl. 361-198.000.

Grzanowski, Edmund S., Jr.; and Glengary, Philip J. Automatic light signalling system. 4,642,477, Cl. 307-113.000.

GSP Metals & Chemicals Corporation: *See*—
Van Antwerp, William P.; and Lincoln, Phillip A., 4,642,134, Cl. 75-101.00R.

GTE Communication Systems Corporation: *See*—
Blackburn, Tom L., 4,642,426, Cl. 370-13.100.

GTE Products Corporation: *See*—
de Vos, Hendrik A. J.; and Labouliere, Elzear R., 4,642,742, Cl. 362-375.000.

English, George J.; and Chakrabarti, Kirti B., 4,642,514, Cl. 313-111.000.
Hsieh, Martin Y., 4,642,299, Cl. 501-97.000.

Guermandi, Romano: *See*—
Semin, Fikret; Guermandi, Romano; and Cucco, Gian C., 4,641,696, Cl. 152-209.00R.

Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, to BBL Industries, Inc. Telephone paging system and method. 4,642,425, Cl. 379-57.000.

Gulf Canada Limited: *See*—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.

Gummelt, Klaus; Schulz, Jurgen; Salamon, Klaus; and Rabenstein, Heinrich, to Varta Batterie A.G. Device for indicating the fully charged state of a battery. 4,642,600, Cl. 338-34.000.

Gunn, Lawrence H., to Pestcon Systems, Inc. Apparatus for fumigating bulk-stored commodities. 4,641,573, Cl. 99-482.000.

Gunter, Mary, to Solco Basel AG. Apparatus for receiving and reinfusing blood. 4,642,088, Cl. 604-4.000.

Gunter, Ruhle: *See*—
Muller, Erich; Gunter, Ruhle; and Stocker, Wilhelm, 4,641,734, Cl. 192-53.00F.

Gunther, Dieter, to Zeiss Ikon Aktiengesellschaft. Lock with bolt enlargement. 4,641,508, Cl. 70-380.000.

Gustafson, Harry A.; Lim, Wah L.; and Zeman, Francis H., to Honeywell Inc. Ring laser lock-in correction apparatus. 4,641,970, Cl. 356-350.000.

Guthling, Klaus; Meyer, Adolf J.; and Miethe, Manfred, to Fa. Wilhelm Barenschee. Clamping device for printing plates and printing cloths on printing machines. 4,641,576, Cl. 101-415.100.

Guttinger, Hannes; and Pfister, Gustav, to Cerberus AG. Scattered radiation smoke detector. 4,642,471, Cl. 250-574.000.

Guyon, Claude: *See*—
Cotrel, Claude; Guyon, Claude; Roussel, Gerard; and Taurand, Gerard, 4,642,308, Cl. 514-253.000.

H. Maihak AG: *See*—
Nestler, Volker; and Olsowski, Wolfgang, 4,641,973, Cl. 356-418.000.

Haas, Hans: *See*—
Ressel, Herbert; Haas, Hans; and Krause, Johannes, 4,642,224, Cl. 423-321.00R.

Haas, Jan T.; and Hadwin, Robin-Leslie, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Controllable diffuser for an air intake of an aircraft. 4,641,678, Cl. 137-15.100.

Hadwin, Robin-Leslie: *See*—
Haas, Jan T.; and Hadwin, Robin-Leslie, 4,641,678, Cl. 137-15.100.

Haeck, Paul J.; and Jacobs, Gary R., to Von Duprin, Inc. Lever handle door trim. 4,641,866, Cl. 292-336.300.

Haga, Katutoshi: *See*—
Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.

Haga, Minoru: *See*—
Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.

Hagen, Rainer: *See*—
Coenen, Hubert; and Hagen, Rainer, 4,642,401, Cl. 585-241.000.

Hagerty, Sydney: *See*—
DeVisser, Richard B.; and Hagerty, Sydney, 4,642,188, Cl. 210-333.100.

Haggerty, David L.: *See*—
Tedesco, Robert J.; and Haggerty, David L., 4,642,431, Cl. 200-153.00G.

Hagino, Hideo: *See*—
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Hahn, Marlin D., to Texan Nut Sheller Pecan Company. Nut splitter. 4,641,430, Cl. 30-120.500.

Hahne, Walter B., to Associated Concrete Products. Highway barrier with level internal ducts and construction method. 4,641,993, Cl. 404-4.000.

Hajek, Manfred; Salzburg, Herbert; and Ziemann, Heinz, to Bayer Aktiengesellschaft. Polyamines. 4,642,344, Cl. 544-196.000.

Halbert, Seymour P.; and Anken, Milton, to Diamedix Corporation. Sandwich EIA for antigen. 4,642,285, Cl. 435-7.000.

Hale, Ronald G.; Woodley, Thomas R.; and Tornstrom, Paul K., to Plastic Specialties and Technologies, Inc. Stain-resistant antimony organic sulfur-containing compounds and vinyl halide resins containing same. 4,642,200, Cl. 252-400.540.

Halioua, Maurice; and Srinivasan, Venugopal, to New York Institute of Technology. Method and apparatus for surface profilometry. 4,641,972, Cl. 356-376.000.

Hall Surgical, division of Zimmer, Inc.: *See*—
Pascaloff, John H., 4,641,551, Cl. 74-785.000.

Hallqvist, Ellert, to SMT Machine Company AB. Tool changer. 4,641,413, Cl. 29-568.000.

Halls, Lawrence M.: *See*—
Wynn, Edward J.; Musser, Glenn A.; and Halls, Lawrence M., 4,641,490, Cl. 56-10.200.

Halvorsen, Wilmet P. Rolling boat cover. 4,641,600, Cl. 114-361.000.

Hamanaka, Toshiyuki: *See*—
Ogawa, Yutaka; Yamada, Shunichi; and Hamanaka, Toshiyuki, 4,642,210, Cl. 264-62.000.

Hamanishi, Yoshinari, to Nippon Kokagu K. K. Four-group telephoto zoom lens. 4,641,928, Cl. 350-427.000.

Hamburg, Douglas R., to Ford Motor Company. Adaptive feedforward air/fuel ratio control for vapor recovery purge system. 4,641,623, Cl. 123-518.000.

Hamlin, Gregory P.: *See*—
Johnson, Dewey A.; Hamlin, Gregory P.; and Schukar, Gary W., 4,641,555, Cl. 83-29.000.

Hancock, Kendal: *See*—
Scheurer, Robert S.; and Hancock, Kendal, 4,642,060, Cl. 441-70.000.

Hanes, Ronnie M., to National Distillers and Chemical Corporation. Conjugated alkadiene telomerization to organo-oxyalkadienes. 4,642,392, Cl. 568-690.000.

Hanhikoski, Hannu; Kalliola, Lauri; and Malkia, Hannu, to Oy Wartsila Ab. Method and arrangement for web handling. 4,642,164, Cl. 162-207.000.

Hankison, Paul M. Parking guide. 4,641,994, Cl. 404-6.000.

Hansen, Debra K.: *See*—
Bradley, John J.; and Hansen, Debra K., 4,642,109, Cl. 604-385.00Z.

Hansen, Gerald D.; and Biber, Joseph N., to Atlantic Richfield Company. Method and composition for inhibiting corrosion in aqueous heat transfer systems. 4,642,221, Cl. 422-16.000.

Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, to Danfoss A/S. Electromagnetic flow meter. 4,641,537, Cl. 73-861.120.

Hansen, Henning M.: *See*—
Jacobsen, Hans E.; Hansen, Henning M.; Nyrup, John; Hansen, Henry; and Lassithiotakis, Konstantin, 4,641,536, Cl. 73-861.120.

Hansen, Henry: *See*—
Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, 4,641,537, Cl. 73-861.120.
Jacobsen, Hans E.; Hansen, Henning M.; Nyrup, John; Hansen, Henry; and Lassithiotakis, Konstantin, 4,641,536, Cl. 73-861.120.

Hansen, Per K., to Position Orientation Systems, Ltd. Method and apparatus for position and orientation measurement using a magnetic field and retransmission. 4,642,786, Cl. 364-559.000.

Hanson, Russell: *See*—
Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, 4,641,814, Cl. 254-10.500.

Hanssler, Gerd: *See*—
Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.

Harada, Kosuke; Murata, Katsuaki; and Nakamizo, Takazi, to Nishimu Electronics Industries Co., Ltd. Ferroresonant constant AC voltage regulator. 4,642,549, Cl. 323-210.000.

Harbour, John, to TRW Probe Electronics Co. Ltd. Strain gauge assemblies. 4,641,719, Cl. 177-136.000.

Hargreaves, Edward; and Simpson, Andrew F., to Pilkington Brothers P.L.C. Apparatus for and method of coating glass. 4,642,130, Cl. 65-60.100.

Harle, Anton. Aspirator for withdrawal of secretions from wounds. 4,642,093, Cl. 604-54.000.

Harman, Theodore C., to Massachusetts Institute of Technology. Process for making mercury cadmium telluride. 4,642,142, Cl. 148-171.000.

Harmer, Alan L., to Stanley Electric Co. Ltd. Immersion refractometer with angle prism. 4,641,965, Cl. 356-135.000.

Harms, Wolfgang. Protective lens cover for optical means. 4,641,932, Cl. 350-587.000.

Harper, Jay. Heat exchanger with radial baffles. 4,642,149, Cl. 165-160.000.

Harrington, Earl J., to Overhead Conveyor Company. Free rotation sprocket, drag chain conveyor system. 4,641,583, Cl. 104-172.100.

Harris, Gary L., to Baker Oil Tools, Inc. Valve with rotary valve head. 4,641,682, Cl. 137-329.040.

Harris, Gerald. Bipod mounting device and muzzle brake. 4,641,451, Cl. 42-85.000.

Harris Graphics Corporation: *See*—
Mowry, Harry E.; and Hawkes, Richard B., 4,641,825, Cl. 270-53.000.

Harris, Stephen J.; Woods, John G.; and Rooney, John M., to Loctite (Ireland) Limited. Polymer bound calixarenes. 4,642,362, Cl. 556-419.000.

Hartman, John E.; and Venaleck, John T., to Associated Enterprises, Inc. Surface mount compatible connector system with mechanical integrity. 4,641,426, Cl. 29-839.000.

Harumoto Iron Works Co., Ltd.: *See*—
Kishida, Hiroo; and Takenaka, Hirofumi, 4,641,816, Cl. 254-228.000.

Harvey, Frederick W.; and Johnson, Glenn W., to Eastman Kodak Company. Film leader positioning apparatus. 4,641,936, Cl. 354-212.000.

Harvey, Richard: *See*—
Thomas, Charles E.; and Harvey, Richard, 4,641,599, Cl. 114-346.000.

Harvey, Robin J.; Gallagher, Hayden E.; and Schumacher, Robert W., to Hughes Aircraft Company. Wire-ion-plasma electron gun employing auxiliary grid. 4,642,522, Cl. 315-111.310.

Hasegawa, Yoshihiko, to Scovill Japan Kabushiki Kaisha. Socket for snap fastener. 4,641,401, Cl. 24-681.000.

Hashimoto Forming Kogyo Co., Ltd.: *See*—
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,641,890, Cl. 301-37.0SS.

Hatakeyama, Iwao: *See*—
Ishii, Osamu; Yoshimura, Fumikatsu; and Hatakeyama, Iwao, 4,642,245, Cl. 427-47.000.

Hattori, Torao; Nishimura, Minoru; and Goto, Masaki, to Honda Giken Kogyo Kabushiki Kaisha; and Fukui Sinta Kabushiki Kaisha. V-belt transmission apparatus. 4,642,077, Cl. 474-201.000.

Hattori, Toshihiro: *See*—
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Uriuhara, Makoto, 4,642,771, Cl. 364-424.100.

Hauni-Richmond, Inc.: *See*—
Hinzmann, Alfred, 4,642,083, Cl. 493-93.000.

Hauni-Werke Korber & Co. KG.: *See*—
Masuch, Gerhard; and Riedel, Claus, 4,641,771, Cl. 226-115.000.

Haupt, Randy L., to United States of America, Air Force. Reducing grating lobes due to subarray amplitude tapering. 4,642,645, Cl. 342-379.000.

Havenhill, Douglas D.: *See*—
Kral, Kevin D.; and Havenhill, Douglas D., 4,642,501, Cl. 310-90.500.

Hawkes, Richard B.: *See*—
Mowry, Harry E.; and Hawkes, Richard B., 4,641,825, Cl. 270-53.000.

Hawkey, Dale F.: *See*—
Reeves, Roger D.; and Hawkey, Dale F., 4,641,531, Cl. 73-622.000.

Hayashi, Steven R.: *See*—
Thomas, Charles E.; Lee, Minyoung; Bedard, James F.; and Hayashi, Steven R., 4,642,617, Cl. 340-680.000.

Hayes, Cecil E.; and Eash, Matthew G., to General Electric Company. Shield for decoupling RF and gradient coils in an NMR apparatus. 4,642,569, Cl. 324-318.000.

Haynie, Timothy J., to Chicago Bridge & Iron Company. Vertical shell and tube heat exchanger with spacer or clip to form uniform thickness falling films on exterior surfaces of tubes. 4,641,706, Cl. 165-118.000.

Hays, Frank W.: *See*—
Wise, Carl D.; and Hays, Frank W., 4,642,643, Cl. 342-14.000.
Wise, Carl D.; Hays, Frank W.; and Lisle, Thomas K., Jr., 4,642,644, Cl. 342-14.000.

Hayton, Eugene P.: *See*—
Peters, Gerald; Hayton, Eugene P.; and Failor, Raymond A., 4,641,385, Cl. 5-82.00R.

Haze, Setsuo, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method and apparatus. 4,642,788, Cl. 364-567.000.

HBOG-Oil Sands Limited Partnership: *See*—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.

Hearn, Larry J.: *See*—
Whedon, Parker; and Hearn, Larry J., 4,642,065, Cl. 446-209.000.

Hebel, Gregory F.; and Temkin, Gregg A., to Homaco, Inc. Quick connect frame. 4,641,754, Cl. 211-26.000.

Hebert, Alfred M. Oil filter. 4,642,183, Cl. 210-232.000.

Hedel, Rudolph H.: *See*—
Nyul, Paul; and Hedel, Rudolph H., 4,642,513, Cl. 313-110.000.

Hedge, Roger W.; and Brown, Ian C., to British-American Tobacco Company Limited. Expansion of tobacco. 4,641,665, Cl. 131-296.000.

Hediger, Edwin A., to Eastman Kodak Company. Angularly adjustable web-supporting steering roller. 4,641,770, Cl. 226-23.000.

Heeres, Stanley D.: *See*—
Vanderlaan, Robert D.; and Heeres, Stanley D., 4,641,812, Cl. 251-65.000.

Hefti, Walter: *See*—
Mondini, Giancarlo; Hefti, Walter; and Kaufmann, Siegfried, 4,641,397, Cl. 19-258.000.

Hegedus, Laszlo ; and Horvath, Zoltan. Training apparatus for kicking a football. 4,641,834, Cl. 272-76.000.

Hegner, Gunter: *See*—
Achtnig, Peter; and Hegner, Gunter, 4,642,723, Cl. 361-124.000.

Heidel, Jeffrey C.: *See*—
Swartz, Harold L.; and Heidel, Jeffrey C., 4,642,555, Cl. 324-60.00C.

Heidelberger Druckmaschinen AG: *See*—
Rodi, Anto; and Blasius, Udo, 4,642,455, Cl. 250-221.000.

Heimbigner, Thomas: *See*—
Tsui, Gary; and Heimbigner, Thomas, 4,641,986, Cl. 403-164.000.

Heine, Otto R.; and Riede, Peter M., to R & H Technologies, Inc. Wear resistant pipe bend for slurry transport. 4,641,864, Cl. 285-179.000.

Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, to Bayer Aktiengesellschaft. N-(3-chloro-1,2,4-oxadiazol-5-yl)-ureas. 4,642,312, Cl. 514-364.000.

Heiniger, Peter; Masek, Jaroslav; and Senn, Herbert, to BBC Brown, Boveri & Company, Limited. Valve for steam supply on double casing turbines. 4,642,025, Cl. 415-139.000.

Heinix, Lucien J., to Alphadent. Alignment cap for mounting artificial teeth on working models. 4,642,050, Cl. 433-56.000.

Heinz, Karl-Otto: *See*—
Friebe, Karl-Heinz; Heinz, Karl-Otto; and Scholten, Werner, 4,642,030, Cl. 417-203.000.

Heinz, Stoewer; and Wubbo, Ockels, to Agence Spatiale Europeenne. Method of and device for restraining the sleeping body of an astronaut in conditions of weightlessness. 4,641,386, Cl. 5-413.000.

Heinze, Horst: *See*—
Herbig, Henning; Heinze, Horst; Drachenberg, Franz; and Pontoppidan, Knud, 4,642,652, Cl. 343-915.000.

Heitzmann, Richard F.; Fitzgerald, Mark; and Sawyer, James L., to Lone Star Industries, Inc. Mineral binder and compositions employing the same. 4,642,137, Cl. 106-85.000.

Helm, Herbert W., to F. L. Smithe Machine Company, Inc. Apparatus for making window patches. 4,642,085, Cl. 493-222.000.

Hempel, David A.: *See*—
Polinsky, Samuel M.; Bierman, Larry W.; and Hempel, David A., 4,642,181, Cl. 209-167.000.

Hemsky, Robert L.: *See*—
Orsburn, Michael L.; Hemsky, Robert L.; and Bacon, James L., 4,642,682, Cl. 358-80.000.

Henkel Corporation: *See*—
Rogier, Edgar R., 4,642,391, Cl. 568-624.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Kruse, Hans; Koester, Klaus; Carduck, Franz-Josef; Wilsberg, Heinz-Manfred; and Puchta, Rolf, 4,642,197, Cl. 252-98.000.

Hennard, Jean: *See*—
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.

Hepfer, Rolf; and Kieninger, Rudolf, to Joseph Kieninger Uhrenfabrik GmbH. Clock with mechanical drive. 4,641,975, Cl. 368-124.000.

Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., to Kimberly-Clark Corporation. Disposable underpants, such as infant's training pants and the like. 4,641,381, Cl. 2-400.000.

Herb, Armin, to Hilti Aktiengesellschaft. Expansion dowel. 4,642,008, Cl. 411-16.000.

Herbig, Henning; Heinze, Horst; Drachenberg, Franz; and Pontoppidan, Knud, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Unfoldable antenna reflector. 4,642,652, Cl. 343-915.000.

Herdin, Gunther, to Steyr-Daimler-Puch AG. Fuel injection nozzle for internal combustion engines. 4,641,621, Cl. 123-446.000.

Herman, Richard G.: *See*—
Klier, Kamil; Herman, Richard G.; and Vedage, Gamini A., 4,642,381, Cl. 564-480.000.

Herman, Thomas: *See*—
Lidow, Alexander; and Herman, Thomas, 4,642,666, Cl. 357-23.400.

Hermann Berstorff Maschinenbau GmbH: *See*—
Anders, Dietmar, 4,642,039, Cl. 425-140.000.

Heskett, Don E. Method of treating fluids. 4,642,192, Cl. 210-638.000.

Hewitt, Michael T. H.; Ballance, John W.; and Scott, Richard P. L., to British Telecommunications Public Limited Company. Communications network having a single node and a plurality of outstations. 4,642,806, Cl. 370-95.000.

Hewitt, Timothy W. Wheeled pallet. 4,641,845, Cl. 280-79.10A.

Hewlett-Packard Company: *See*—
Eaton, Bill; and Higgins, Marvin L., 4,642,524, Cl. 315-169.300.
Groves, William A.; Snook, Matthew L.; and Browen, Rodney, 4,642,561, Cl. 324-73.00R.

Heyman, Neal R. Bumper guard. 4,641,870, Cl. 293-102.000.

Heyraud, Georges, to Forges Stephanoises S.A. Lightweight electronic torque wrench. 4,641,538, Cl. 73-862.260.

Hibberd, Kenneth A.; Anderson, Paul C.; and Barker, Melanie, to Molecular Genetics Research and Development Limited Partnership. Tryptophan overproducer mutants of cereal crops. 4,642,411, Cl. 800-1.000.

Hickman, John B.: *See*—
Webb, Russell; and Hickman, John B., 4,641,476, Cl. 52-60.000.

Hieftje, Gary M.; and Honigs, David H., to Indiana University Foundation. Method and device for spectral reconstruction. 4,642,778, Cl. 364-498.000.

Hiestand, Karl, to SMW Schneider & Weisshaupt GmbH. Pallet for seating interchangeable clamping jaws of a chuck. 4,641,414, Cl. 29-568.000.

Higgins, Marvin L.: *See*—
Eaton, Bill; and Higgins, Marvin L., 4,642,524, Cl. 315-169.300.

Higuchi, Hisayuki: *See*—
Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiko, 4,642,486, Cl. 307-463.000.

Higuchi, Toshiro; Mizuno, Takeshi; and Aikawa, Noboru, to Seiko Seiki Kabushiki Kaisha. Control arrangement for magnetic bearing apparatus. 4,642,500, Cl. 310-90.500.

Higure, Naoto: *See*—
Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, 4,642,659, Cl. 346-76.0PH.

Hill, Paul L., to USS Engineers and Consultants, Inc. Teeming apparatus and method. 4,641,768, Cl. 222-590.000.

Hill, Robert C., to Atlantic Richfield Company. Multi-zone flow control method and apparatus. 4,642,191, Cl. 210-532.100.

Hilti Aktiengesellschaft: *See*—
Herb, Armin, 4,642,008, Cl. 411-16.000.

Himeno, Kiyoshi: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, 4,642,339, Cl. 534-650.000.

Hinch, Mark G., to AT&T Bell Laboratories. Shared memory with two distinct addressing structures. 4,642,755, Cl. 364-200.000.

Hinds, Walter E., to Northern Magnetics, Inc. Torque motor with unlimited angular excursion. 4,642,539, Cl. 318-439.000.

Hinn, Werner, to RCA Corporation. Digital video signal processor with analog level control. 4,642,690, Cl. 358-169.000.

Hinzmann, Alfred, to Hauni-Richmond, Inc. Method and apparatus for making and manipulating inner tubes for use in dry cells or the like. 4,642,083, Cl. 493-93.000.

Hirano, Shinji: *See*—
Ohira, Tsunehisa; Hirano, Shinji; and Sadakane, Koji, 4,642,713, Cl. 360-85.000.

Hirano, Toshio: *See*—
Yoshio, Junichi; Hirano, Toshio; Yasukawa, Kenichiro; and Yoshida, Masayuki, 4,642,812, Cl. 381-1.000.

Hiranuma, Hiromichi: *See*—
Ikematsu, Morio; and Hiranuma, Hiromichi, 4,641,681, Cl. 137-315.000.

Hiratsuka, Shoji: *See*—
Nakatsugawa, Kenji; Katayama, Aiichi; Sekiya, Hitoshi; and Hiratsuka, Shoji, 4,642,519, Cl. 315-1.000.

Hiroi, Takashi; Ninomiya, Takanori; and Nakagawa, Yasuo, to Hitachi, Ltd. Inspection method and apparatus for joint junction states. 4,641,527, Cl. 73-582.000.

Hirosaki, Botaro; and Kuriyama, Takashi, to NEC Corporation. Phase-locked loop with supplemental phase signal. 4,642,575, Cl. 331-1.00A.

Hirose, Kenichi: *See*—
Sato, Hiroshi; Ishii, Norio; and Hirose, Kenichi, 4,642,409, Cl. 585-486.000.

Hirose, Masayuki: *See*—
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.

Hirose, Toshiro: *See*—
Uramoto, Yoshihito; Kaneko, Takasi; and Hirose, Toshiro, 4,642,011, Cl. 411-258.000.

Hisajima, Masahiko: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.

Hisatsune, Fumiyuki: *See*—
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Hishiki, Hideo: *See*—
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Hissong, George: *See*—
Tripp, Edwin P., III; Weisman, Jason; and Hissong, George, 4,642,244, Cl. 427-44.000.

Hitachi, Ltd.: *See*—
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.
Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.
Furuhata, Takashi; Mohri, Katsuo; and Konishi, Katsuo, 4,642,708, Cl. 360-77.000.
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Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiko, 4,642,486, Cl. 307-463.000.
Ito, Syoichi; and Akahori, Ken-ichi, 4,642,622, Cl. 340-724.000.
Izumi, Shigeru; Senoh, Makoto; Tsumaki, Koji; and Miyata, Kenji, 4,641,526, Cl. 73-572.600.
Kudo, Satoshi, 4,641,419, Cl. 29-591.000.
Mashino, Keiichi, 4,642,548, Cl. 322-25.000.
Matsuno, Hiromitsu; Murayama, Seiichi; and Ono, Tetsuo, 4,642,512, Cl. 313-25.000.
Mori, Takanobu; Fukui, Yutaka; Kashimura, Tetsuo; and Yanai, Yoshimi, 4,642,495, Cl. 310-52.000.
Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, 4,642,412, Cl. 136-244.000.
Nagae, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, 4,641,924, Cl. 350-339.00R.
Noda, Tsutomu; Shinkawa, Keiro; and Amada, Nobutaka, 4,642,573, Cl. 329-50.000.
Sugawara, Tooru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, 4,642,601, Cl. 338-35.000.
Suzuki, Toshiro; and Matsubara, Osamu, 4,642,552, Cl. 323-315.000.
Takahashi, Koji; and Kawashima, Machio, 4,642,527, Cl. 315-368.000.
Tsunehiro, Takashi; and Tsujioka, Shigeo, 4,642,625, Cl. 340-747.000.
Yanai, Takao; and Takahashi, Yoshiaki, 4,642,760, Cl. 364-200.000.

Hitachi Maxell, Ltd.: *See*—
Kumada, Akio, 4,642,509, Cl. 310-323.000.

Hitachi Metals, Ltd.: *See*—
Morita, Shigetoshi; Ashizawa, Masaaki; and Yamada, Hirohide, 4,642,719, Cl. 360-126.000.

Hitachi Shipbuilding & Engineering Company Limited: *See*—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.

Hobas Engineering & Durotec AG: *See*—
Jost, Ralph, 4,642,156, Cl. 156-425.000.

Hoberman, Barry A., to Monolithic Memories, Inc. High speed first-in-first-out memory. 4,642,797, Cl. 365-221.000.

Hobrecht, Stephen W., to National Semiconductor Corporation. IC low-capacitance, low-frequency, low-current, non-radiating oscillator. 4,642,579, Cl. 331-111.000.

Hodge, Ian M., to B. F. Goodrich Company, The. Method of enhancing the flexibility of polypyrrole structures. 4,642,331, Cl. 528-492.000.

Hodges, Donald F. Boat-trailer latch. 4,641,598, Cl. 114-344.000.

Hodogaya Chemical Co., Ltd.: *See*—
Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikkawa, Katsumasa, 4,642,663, Cl. 346-221.000.

Hodsdon, Roy F., to General Electric Company. Illuminated compact control surface. 4,642,627, Cl. 340-765.000.

Hodsdon, Roy F.; and Bell, Robert K., to General Electric Company. Frequency synthesizer module. 4,642,735, Cl. 361-424.000.
Hoechst Aktiengesellschaft: *See—*
Dettbarn, Hans-Jurgen; and Zimmermann, Josef, 4,642,095, Cl. 604-72.000.
Ressel, Herbert; Haas, Hans; and Krause, Johannes, 4,642,224, Cl. 423-321.00R.
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Hoffman, John A.: *See—*
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Hoffman, Louis S.: *See—*
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Hoffmann-La Roche Inc.: *See—*
Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,642,364, Cl. 556-438.000.
Ruttimann, August, 4,642,361, Cl. 549-546.000.
Hoffmann, Martin, to Werner H. K. Peters Maschinen Fabrik GmbH. One-sided corrugated cardboard machine. 4,642,087, Cl. 493-463.000.
Hoffmann, Wolfgang, to B & H Manufacturing Company. Rotatable shaft assembly. 4,641,558, Cl. 83-152.000.
Hofmann, Ludwig, to Siemens Aktiengesellschaft. Digital quartz-stabilized FM discriminator. 4,642,574, Cl. 329-50.000.
Hofmeister, Peter; Burstinghaus, Rainer; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Novel esters, their preparation, and their use for controlling pests. 4,642,368, Cl. 560-65.000.
Hohenester, Otmar: *See—*
Osthoff, Walter; Hohenester, Otmar; and Gessner, Anton, 4,641,403, Cl. 26-3.000.
Hoitink, Harry A. J., to Ohio State University, The. Production of disease suppressive compost and microorganism culture for use therein. 4,642,131, Cl. 71-6.000.
Holland, George W.: *See—*
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Homaco, Inc.: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Kawaguchi, Takeshi; Suzuki, Tsuguya; and Shibata, Katsuhiro, 4,641,731, Cl. 188-218.0XL.
Masuda, Tatsuo; Enokimoto, Akito; and Ohtsuka, Kazutoshi, 4,641,854, Cl. 280-701.000.
Miyashita, Norio; and Nemoto, Akira, 4,641,884, Cl. 297-284.000.
Ohkubo, Tsuyoshi, 4,641,880, Cl. 296-154.000.
Sato, Makoto; and Matsuda, Shohei, 4,641,893, Cl. 303-113.000.
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Yamaguchi, Ken, 4,641,721, Cl. 180-229.000.
Honda, Haruhisa; Tsuchiya, Hiroaki; Setani, Michitaka; and Tokuhara, Mitsuhiro, to Canon Kabushiki Kaisha. Image exposing apparatus. 4,641,944, Cl. 355-1.000.
Honegger, Werner, to Ferag AG. Printed product coil. 4,641,795, Cl. 242-59.000.
Honeycutt, Kenneth D.: *See—*
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Honeywell Inc.: *See—*
Brownell, David J.; Christensen, Daniel C.; Erie, David G.; and Youngner, Daniel, 4,642,162, Cl. 156-643.000.
Dalal, Samir K., 4,642,727, Cl. 361-212.000.
Gustafson, Harry A.; Lim, Wah L.; and Zeman, Francis H., 4,641,970, Cl. 356-350.000.
Walker, Charles S., 4,642,749, Cl. 363-56.000.
Honeywell Information Systems Inc.: *See—*
Bruce, Kenneth E., 4,642,626, Cl. 340-750.000.
Honig, Arnold, to Syracuse University. Production of spin polarized fusion fuels. 4,642,206, Cl. 264-0.500.
Honig, Emanuel M., to United States of America, Energy. Reversing-counterpulse repetitive-pulse inductive storage circuit. 4,642,476, Cl. 307-108.000.
Honig, Milton L.; and Weil, Edward D., to Stauffer Chemical Company. Process for preparing methyl phosphonamides. 4,642,366, Cl. 558-138.000.
Honigs, David H.: *See—*
Hieftje, Gary M.; and Honigs, David H., 4,642,778, Cl. 364-498.000.
Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiko, to Hitachi, Ltd. Decoder circuit using transistors or diodes of different characteristics. 4,642,486, Cl. 307-463.000.
Honmoto, Syuichi: *See—*
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Hoogendijk, Adrianus H.: *See—*
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Hooper, Anthony W.; Cormack, Alexander D.; and Marchand, Pierre, to Uniweld Inc. Bearing support for discharger mechanism. 4,642,015, Cl. 414-325.000.
Hooper, Anthony W., to Uniweld Inc. Rotary screen of the vertical pressure type having pulp stock feed at different axial positions on the screen. 4,642,189, Cl. 210-405.000.
Hoover, Alan A., to RCA Corporation. Projection TV deflection loss protection circuit. 4,642,532, Cl. 315-386.000.
Hopkins, F. Kenneth, to Angstrom Robotics & Technologies, Inc. Fluorescent object recognition system having self-modulated light source. 4,642,526, Cl. 315-244.000.
Hopkins, Martin E.: *See—*
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Horiike, Yasuhiro: *See—*
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Horowitz, Alexandre; Cuypers, Martinus H.; and van Rooji, Jacobus H. M., to Volvo Car B.V. Transmission chain. 4,642,079, Cl. 474-219.000.
Horowitz, Michael D.; and Horowitz, Robin M. Supporting bracket for a feminine hygiene cabinet. 4,641,898, Cl. 312-209.000.
Horowitz, Robin M.: *See—*
Horowitz, Michael D.; and Horowitz, Robin M., 4,641,898, Cl. 312-209.000.
Horstmann, Karl H.: *See—*
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Horvath, Zoltan: *See—*
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Hosoe, Kazuya: *See—*
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Hosokawa, Hidehiro; Iida, Yoshimichi; and Takahashi, Hisatsugu, to Nichirei Corporation. Method of making ice having a striped pattern and an apparatus for making the same. 4,641,500, Cl. 62-70.000.
Hotset Heizpatronen und Zubehor GmbH: *See—*
Schwarzkopf, Eugen, 4,642,043, Cl. 425-547.000.
Hotto, Robert: *See—*
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Houghton, Alan N.: *See—*
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Howarth, Robert A., Jr., to Transparent Packaging Corp. Apparatus for forming flexible fold lines in a thermoplastic sheet. 4,642,086, Cl. 493-341.000.
Howerton, Anderson W., to Dayco Corporation. Belt construction clip for a transverse belt element therefor and method of making the same. 4,642,076, Cl. 474-201.000.
Howes, Peter, to Lucas Industries Public Limited Company. Fuel injection nozzles. 4,641,784, Cl. 239-453.000.
Howland, Howard. Method for coating cylindrical members. 4,642,248, Cl. 427-224.000.
Hsieh, Martin Y., to GTE Products Corporation. Silicon nitride having low dielectric loss. 4,642,299, Cl. 501-97.000.
Huang, Shyh-Chin: *See—*
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Hubner, Hans J. Method of measuring the magnitude of an environmental parameter, especially the concentration of an explosion-generating gas in a subterranean atmosphere. 4,642,296, Cl. 436-138.000.
Hucker, David J., to Sundstrand Corporation. Electromagnetic energy storage and supply system. 4,642,535, Cl. 318-161.000.
Hudson Lock, Inc.: *See—*
Boucher, James E., 4,641,506, Cl. 70-129.000.
Huels Aktiengesellschaft: *See—*
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Hughes Aircraft Company: *See—*
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Kramer, Nathan R., 4,642,038, Cl. 425-93.000.
O'Meara, Thomas R., 4,642,582, Cl. 332-7.510.
Hughes, David C., to Milton Bradley Company. Rotating amusement device having motion governor. 4,641,831, Cl. 272-31.00R.
Hughes, Richard L.; Turney, Anthony W.; and Look, Raymond J., to AMP Incorporated. Low profile cable with high performance characteristics. 4,642,480, Cl. 307-147.000.
Hughes Tool Company: *See—*
Eppink, Jay M., 4,641,717, Cl. 175-74.000.
Regan, Albert M., 4,641,841, Cl. 277-30.000.
Wightman, William D., 4,641,708, Cl. 166-208.000.
Huisma, Camiel, to Oy Wartsila Ab. Multipurpose cleaning and transportation system. 4,641,392, Cl. 15-302.000.
Hulland, Burton L.; and Litchford, George B., to Litchstreet Co. Simple passive/active proximity warning system. 4,642,648, Cl. 342-455.000.
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., to Lever Brothers Company. Liquid bleaching compositions. 4,642,198, Cl. 252-94.000.
Hunter, Douglas L.; and Moore, Stanley E., to Dow Chemical Company, The. Poisoning of resin supported catalyst. 4,642,395, Cl. 568-883.000.
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Smith, Peter R., 4,641,625, Cl. 123-575.000.

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Vogel, Ferdinand L., 4,642,201, Cl. 252-503.000.

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Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinckney, Warren J.; and Wilson, Alan D., 4,642,438, Cl. 219-121.00L.
Caswell, Nathan S.; and Chang, Ifay F., 4,642,459, Cl. 250-227.000.
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Cocke, John; Markstein, Peter W.; and Markstein, Victoria I., 4,642,765, Cl. 364-300.000.
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Lidow, Alexander; and Herman, Thomas, 4,642,666, Cl. 357-23.400.
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Muller, Helmut, 4,641,549, Cl. 74-732.000.
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Polinsky, Samuel M.; Bierman, Larry W.; and Hempel, David A., 4,642,181, Cl. 209-167.000.

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Sjalander, Bo A., 4,641,716, Cl. 175-62.000.

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Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., 4,641,791, Cl. 241-66.000.

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Klein, Hans-Christof; Armonier, Ulrich; Oesterle, Hermann; and Jendroska, Juergen, 4,641,519, Cl. 73-129.000.

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Elbs, Peter; Jeserich, Wolfgang-Dieter; and Wehr, Rudolf, 4,642,211, Cl. 264-85.000.

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Johnson, Dewey A.; Hamlin, Gregory P.; and Schukar, Gary W. Paper handling system. 4,641,555, Cl. 83-29.000.

Johnson, Donald A., to Nalco Chemical Company. Method for prevention of phosphonate decomposition by chlorine. 4,642,194, Cl. 210-699.000.

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Johnson, Lawrence. Door brace. 4,641,869, Cl. 292-339.000.
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Noiles, Douglas G., 4,642,123, Cl. 623-22.000.
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Ferrar, Andrew N.; and Jones, Arthur N., 4,642,239, Cl. 426-396.000.
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Hepfer, Rolf; and Kieninger, Rudolf, 4,641,975, Cl. 368-124.000.
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Juhn, Steven K. Apparatus for collecting specimens. 4,641,663, Cl. 128-765.000.
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Rock, Erich; and Brustle, Klaus, 4,641,394, Cl. 16-302.000.
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Kabbaby, Charles B. Shower-mounted douche apparatus. 4,642,100, Cl. 604-150.000.
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Kato, Teruyuki, 4,641,883, Cl. 297-184.000.
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Haze, Setsuo, 4,642,788, Cl. 364-567.000.
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Nagashima, Yoichi, 4,641,563, Cl. 84-1.010.
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Yajima, Toshio, 4,641,828, Cl. 271-227.000.
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Sato, Yoshio, 4,642,256, Cl. 428-42.000.
Kabushiki Kaisha Toshiba: *See*—
Fukushima, Noburu; Yoshino, Hisashi; and Nomura, Shunji, 4,642,136, Cl. 75-234.000.
Kasai, Toshihiro, 4,641,602, Cl. 118-653.000.
Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, 4,642,659, Cl. 346-76.0PH.
Oushiden, Hideshi; and Obara, Naoshi, 4,641,953, Cl. 355-14.00R.
Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.
Sekine, Makoto; Okano, Haruo; and Horiike, Yasuhiro, 4,642,171, Cl. 204-298.000.
Suzuki, Hitoshi; and Sato, Hiroaki, 4,642,508, Cl. 310-321.000.
Tabata, Mitsuo; and Shibuya, Nobuo, 4,642,468, Cl. 250-548.000.
Tamada, Masuo, 4,641,753, Cl. 209-546.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Aoyama, Taro; and Oshima, Yujiro, 4,641,617, Cl. 123-262.000.
Kaczmarek, Wesley R.: *See*—
Zador, Eugene; Kaczmarek, Wesley R.; and Ravipati, Sitaramaiah, 4,642,126, Cl. 51-295.000.
Kageyama, Yoshitaka: *See*—
Masuzawa, Tokihiko; Kageyama, Yoshitaka; and Tomita, Norizou, 4,642,736, Cl. 362-31.000.
Kahlman, Josephus A. H. M.; and Hoogendijk, Adrianus H., to U.S. Philips Corporation. Apparatus for time base correction. 4,642,702, Cl. 358-322.000.
Kahr, Gerhard: *See*—
Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, 4,642,135, Cl. 420-33.000.
Kakimi, Fujio; and Mikami, Takeshi, to Fuji Photo Film Co., Ltd. Encapsulated electrostatographic toner material. 4,642,281, Cl. 430-138.000.
Kakiuchi, Hajime: *See*—
Mashimo, Satoshi; Kakiuchi, Hajime; and Nakajima, Masayoshi, 4,642,082, Cl. 474-260.000.
Kal Kan Foods, Inc.: *See*—
Gordon, Charles, 4,641,605, Cl. 119-1.000.
Kalarickal, Mathew S. Electronic algesimeter. 4,641,661, Cl. 128-744.000.
Kallenberger, Robert H.: *See*—
Funk, Gary L.; Terhune, Robert D.; Kania, Cheryl C.; and Kallenberger, Robert H., 4,642,766, Cl. 364-402.000.
Kalliola, Lauri: *See*—
Hanhikoski, Hannu; Kalliola, Lauri; and Malkia, Hannu, 4,642,164, Cl. 162-207.000.
Kalnin, Ilmar L.: *See*—
Goldberg, Harris A.; Kalnin, Ilmar L.; Williams, Clyde C.; and Spain, Ian L., 4,642,664, Cl. 357-2.000.
Kaltenbach & Voigt GmbH & Co.: *See*—
Lohn, Gerd, 4,642,051, Cl. 433-100.000.
Kamehara, Nobuo: *See*—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,642,148, Cl. 156-89.000.
Kamei Machine Co., Ltd.: *See*—
Kamei, Masato, 4,641,542, Cl. 74-23.000.
Kamei, Masato, to Kamei Machine Co., Ltd. Swing mechanism for winder nozzles. 4,641,542, Cl. 74-23.000.
Kameya, Kazuo, to Elmec Corporation. Method for adjustment of variable delay line. 4,642,588, Cl. 333-139.000.
Kamihama, Kiyoshi: *See*—
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,641,890, Cl. 301-37.0SS.
Kaminaga, Seiji: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.
Kampe, Wolfgang: *See*—
Michel, Helmut; Marzenell, Klaus; Kampe, Wolfgang; Bartsch, Wolfgang; and Schaumann, Wolfgang, 4,642,309, Cl. 514-269.000.
Kanehisa, Takashi; and Yokomakura, Mitsunori, to Matsushita Electric Industrial Co., Ltd. Image display apparatus with deformable accelerating electrodes. 4,642,517, Cl. 313-495.000.
Kaneko, Masahiko: *See*—
Tamada, Hitoshi; Kaneko, Masahiko; Okamoto, Tsutomu; and Yamada, Toshiro, 4,642,795, Cl. 365-10.000.
Kaneko, Shinobu: *See*—
Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.
Kaneko, Takasi: *See*—
Uramoto, Yoshihito; Kaneko, Takasi; and Hirose, Toshiro, 4,642,011, Cl. 411-258.000.
Kaneko, Takushi; Wong, Henry S. L.; and Doyle, Terrence W., to Bristol-Myers Company. Acylamino mitosanes. 4,642,352, Cl. 548-422.000.
Kania, Cheryl C.: *See*—
Funk, Gary L.; Terhune, Robert D.; Kania, Cheryl C.; and Kallenberger, Robert H., 4,642,766, Cl. 364-402.000.
Kansas City Rubber and Belting Company: *See*—
Skates, Raymond E., 4,641,745, Cl. 198-836.000.
Kao Corporation: *See*—
Kishine, Nobuyuki; Imamura, Tetsuya; Yamauchi, Michihide; and Ootani, Tsuyoshi, 4,642,720, Cl. 360-126.000.
Kapich, Davorin D., to United States of America, Energy. Bearing system. 4,641,978, Cl. 384-102.000.
Kaplan, Jerome I., to Indiana University Foundation. Methods for two dimensional nuclear magnetic resonance imaging. 4,642,567, Cl. 324-309.000.
Kapland, Mitchell A.; Norikane, Kiyoshi; and London, Jack W., to Trident Engineering, Inc. Anti-lock up mechanism for revolvers. 4,641,449, Cl. 42-65.000.
Kar, Nareshchrandra J., to Smith International, Inc. Copper-based spinodal alloy bearings. 4,641,976, Cl. 384-95.000.
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, to Degussa Aktiengesellschaft. Activated carbon and process for its production. 4,642,304, Cl. 502-427.000.
Karl Lautenschlager KG, Mobelbeschlagfabrik: *See*—
Lautenschlager, Horst, 4,641,393, Cl. 16-241.000.
Karl M. Reich Maschinenfabrik GmbH: *See*—
Skuthan, Erich, 4,641,772, Cl. 227-123.000.
Karlsson, Goran: *See*—
Kratz, Christer; Engstrom, Ake; and Karlsson, Goran, 4,642,427, Cl. 200-16.00C.
Karp, S. Joel. Power failure responsive warning device. 4,642,605, Cl. 340-130.000.
Kasai, Hitoshi: *See*—
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Uriuhara, Makoto, 4,642,771, Cl. 364-424.100.
Kasai, Toshihiro, to Kabushiki Kaisha Toshiba. Developing apparatus. 4,641,602, Cl. 118-653.000.
Kashima Engineering Co., Ltd.: *See*—
Koyase, Hiroyasu; Funaki, Kinsaku; and Morita, Atsuo, 4,642,138, Cl. 134-22.180.
Kashimura, Tetsuo: *See*—
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Kashiwa, Norio: *See*—
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 4,642,269, Cl. 428-516.000.

Kasper, Melvin C.: *See*—
Niekrasz, Francis M.; Kasper, Melvin C.; and Bockwinkel, Gerald J., 4,641,461, Cl. 49-404.000.

Kasperkovitz, Wolfdietrich G.; and Meeuwis, Johannes C. M., to U.S. Philips Corporation. Level-shifting circuit. 4,642,482, Cl. 307-264.000.

Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Baby carriage hood. 4,641,879. Cl. 296-78.00A.

Kastl, Alfons: *See*—
Muller, Jurgen; Kastl, Alfons; and Farber, Heinrich, 4,641,940, Cl. 354-322.000.

Katalistiks, Inc.: *See*—
Yoo, Jin S.; and Jaecker, John A., 4,642,178, Cl. 208-113.000.

Kataoka, Tadashi, to Ebara Research Ltd.; and Ebara Corporation. Shaft sealing device with floating seal member. 4,641,842, Cl. 277-83.000.

Katayama, Aiichi: *See*—
Nakatsugawa, Kenji; Katayama, Aiichi; Sekiya, Hitoshi; and Hiratsuka, Shoji, 4,642,519, Cl. 315-1.000.

Kato, Akira: *See*—
Yunoki, Yutaka; Kimura, Kenji; Kato, Akira; and Imamura, Tatsuo, 4,642,711, Cl. 360-84.000.

Kato, Hiroyuki: *See*—
Yamamoto, Masatoshi; Kawai, Yasushi; Shudo, Katsuyoshi; Kato, Hiroyuki; and Masuda, Shunsuke, 4,642,437, Cl. 219-84.000.

Kato, Masayasu: *See*—
Naito, Kenzo; Kato, Masayasu; and Tsukamura, Kazuo, 4,642,365, Cl. 558-83.000.

Kato, Shigeo: *See*—
Yoshimura, Takeshi; Sameshima, Mutsuro; Nakanishi, Toru; and Kato, Shigeo, 4,641,620, Cl. 123-432.000.

Kato, Teruyuki, to K.K. Iwai. Foldable support. 4,641,883, Cl. 297-184.000.

Kato, Yasuo: *See*—
Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.

Katz, Harry R. Position locating device and method for interstitial radiotherapy. 4,642,096, Cl. 604-116.000.

Kaufhold, Manfred, to Huels Aktiengesellschaft. Process for the production of methallylbenzene and isobutenylbenzene and their p-substituted alkyl derivatives. 4,642,405, Cl. 585-435.000.

Kaufman, Norman H. Portable apparatus for the recovery of placer gold. 4,642,180, Cl. 209-44.000.

Kaufmann, Siegfried: *See*—
Mondini, Giancarlo; Hefti, Walter; and Kaufmann, Siegfried, 4,641,397, Cl. 19-258.000.

Kawabata, Takashi: *See*—
Tsunekawa, Tokuichi; Sato, Yuichi; Kawabata, Takashi; and Matsumura, Susumu, 4,642,451, Cl. 250-201.000.

Kawaguchi, Takeshi; Suzuki, Tsuguya; and Shibata, Katsuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Disc brake for motorcycles. 4,641,731, Cl. 188-218.0XL.

Kawai, Yasushi: *See*—
Yamamoto, Masatoshi; Kawai, Yasushi; Shudo, Katsuyoshi; Kato, Hiroyuki; and Masuda, Shunsuke, 4,642,437, Cl. 219-84.000.

Kawakami, Shigenobu: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, 4,642,730, Cl. 361-315.000.

Kawamura, Masao: *See*—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.
Yamagishi, Koji; Fuse, Takahiro; Kawamura, Masao; and Matsui, Shinichi, 4,642,694, Cl. 358-236.000.

Kawasaki Steel Corporation: *See*—
Iida, Yoshiaki; and Iwamoto, Katsuo, 4,642,141, Cl. 148-113.000.

Kawase, Shigeo: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.

Kawashima, Machio: *See*—
Takahashi, Koji; and Kawashima, Machio, 4,642,527, Cl. 315-368.000.

Kazarov, Ljubomir R.: *See*—
Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., 4,641,791, Cl. 241-66.000.

KCR Technology, Inc.: *See*—
Dean, Walter C., II, 4,642,661, Cl. 346-153.100.

Keiper Recaro Incorporated: *See*—
Klueting, Bernd A., 4,641,887, Cl. 297-362.000.

Keivanjah, Massoud. Recreational water craft. 4,642,056, Cl. 440-15.000.

Keller, Arnold, to Waldemar Link GmbH & Co. Joint endoprosthesis and instrument for knocking it in or out. 4,642,121, Cl. 623-18.000.

Keller, Arnold: *See*—
Link, Helmut D.; and Keller, Arnold, 4,641,749, Cl. 206-370.000.

Kelley Company, Inc.: *See*—
Bennett, David E., deceased; and Bennett, Barbara E., personal representative, 4,641,388, Cl. 14-71.700.

Kelley, John. Safety bottle closure having a time indicator. 4,641,759, Cl. 215-220.000.

Kelly, James D.: *See*—
Cumming, Stephen A.; and Kelly, James D., 4,642,229, Cl. 424-1.100.

Kelly, Richard E.: *See*—
Aldrich, Roger L.; Bodett, Peter C.; and Kelly, Richard E., 4,641,502, Cl. 62-244.000.

Kelly, Steven G.: *See*—
Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., 4,642,089, Cl. 604-4.000.

Kemp, Dennis E., Jr. Junction device for auger conveyors. 4,641,743, Cl. 198-666.000.

Kemper, Christian T.; Lowenfeld, Simon; and Fox, Mark S., to Westinghouse Electric Corp. Rule based diagnostic system with dynamic alteration capability. 4,642,782, Cl. 364-550.000.

Kendall McGaw Laboratories, Inc.: *See*—
Richmond, Douglass S., 4,642,091, Cl. 604-29.000.

Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi. Toy vehicle launcher and sound generator. 4,642,066, Cl. 446-420.000.

Kenney, Donald M.; and Mandelman, Jack A., to International Business Machines Corporation. Single transistor driver circuit. 4,642,491, Cl. 307-571.000.

Kenny, Thomas J.: *See*—
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Kent Scientific and Industrial Projects Limited: *See*—
Jackson, David A.; Corke, Michael; and Kersey, Alan D., 4,642,458, Cl. 250-225.000.

Kenyon, Eric, to Allware Agencies Limited. Portable fan for winter and summer use. 4,642,441, Cl. 219-364.000.

Kepes, William E.: *See*—
Klinvex, Daniel E.; Crusi, Suzanne B.; Kepes, William E.; and Vano, Joseph A., 4,642,215, Cl. 376-249.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Zhong, Wang D., 4,642,214, Cl. 376-221.000.

Kerr, George T.: *See*—
Dessau, Ralph M.; and Kerr, George T., 4,642,407, Cl. 585-640.000.

Kersey, Alan D.: *See*—
Jackson, David A.; Corke, Michael; and Kersey, Alan D., 4,642,458, Cl. 250-225.000.

Kerst, Gerrit; and Kerst, Hendrik, to Brelko (Proprietary) Limited. Resilient coupling. 4,641,852, Cl. 280-489.000.

Kerst, Hendrik: *See*—
Kerst, Gerrit; and Kerst, Hendrik, 4,641,852, Cl. 280-489.000.

Kervagoret, Gilbert, to Societe Anonyme D.B.A. Device for generating braking pressure for a braking installation with twin circuits. 4,641,497, Cl. 60-563.000.

Kerviel, Alain; and Barbarin, Remy, to Societe Francaise d'Equipements pour la Navigation Aeriene (S.F.E.N.A.). Device for detecting the angular position of the rotor of a rotary electric machine with electronic switching. 4,642,496, Cl. 310-68.00B.

Khlybov, Vyacheslav I.: *See*—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

Kida, Takao: *See*—
Miyashiro, Shigeyoshi; Kida, Takao; Shiio, Tsuyoshi; and Shibai, Hiroshiro, 4,642,335, Cl. 530-409.000.

Kieninger, Rudolf: *See*—
Hepfer, Rolf; and Kieninger, Rudolf, 4,641,975, Cl. 368-124.000.

Kievsky Nauchno-Issledovatelsky Institut Klinicheskoi I Experimentalnoi Khirurgii: *See*—
Sergienko, Nikolai M., 4,642,115, Cl. 623-6.000.

Kikkawa, Katsumasa: *See*—
Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikkawa, Katsumasa, 4,642,663, Cl. 346-221.000.

Kikuchi, Eiki: *See*—
Takata, Yatsuka; Yamada, Tadamasa; and Kikuchi, Eiki, 4,642,219, Cl. 420-104.000.

Kikuchi, Makoto, to Toyoda Koki Kabushiki Kaisha. Manipulation arm mechanism for an industrial robot. 4,642,021, Cl. 414-735.000.

Kim, Choung U.; and Misco, Peter F., Jr., to Bristol-Myers Company. Carbapenem antibiotics. 4,642,341, Cl. 540-350.000.

Kim, Youn S. Apparatus for continuously preheating and charging raw materials for electric furnace. 4,642,048, Cl. 432-103.000.

Kimberly-Clark Corporation: *See*—
Coenen, Joseph D., 4,642,151, Cl. 156-164.000.
Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., 4,641,381, Cl. 2-400.000.

Kimble, Lorraine. Method for reinforcing and hardening human nails. 4,641,669, Cl. 132-73.000.

Kimura, Chikara: *See*—
Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.

Kimura, Hideo: *See*—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.

Kimura, Hiroshi: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.

Kimura, Kenji: *See*—
Yunoki, Yutaka; Kimura, Kenji; Kato, Akira; and Imamura, Tatsuo, 4,642,711, Cl. 360-84.000.

Kingsbury, Allin D.: *See*—
Lavelle, Michael G.; Goldsmith, Claude A.; and Kingsbury, Allin D., 4,642,794, Cl. 364-900.000.

Kinjo, Noriyuki: *See*—
Nagae, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, 4,641,924, Cl. 350-339.00R.
Sugawara, Tooru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, 4,642,601, Cl. 338-35.000.

Kinoshita, Kimiaki: *See*—
Yahagi, Masakichi; Igaki, Tetsuo; Yosinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, 4,642,357, Cl. 549-226.000.

Kinoshita, Takao: *See*—
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,641,942, Cl. 354-406.000.

Kirchhoff, Robert A.; Schrock, Alan; and Gilpin, Jo A., to Dow Chemical Company, The. Prepolymer processing of arylcyclobutene monomeric compositions. 4,642,329, Cl. 526-284.000.

Kirk, Glenn D., to MAI Basic Four, Inc. Monitoring switch mode converter performance utilizing duty cycle. 4,642,748, Cl. 363-56.000.

Kiser, David G.; Spaulding, Donald M.; and Wassmer, Peter J., to Zurex Corporation. Coil edge protecting coil lifter and insert. 4,641,876, Cl. 294-86.400.

Kishi, Hajimu; Seki, Masaki; and Takegahara, Takashi, to Fanuc Ltd. Angle data discriminating method. 4,642,754, Cl. 364-191.000.

Kishida, Hiroo; and Takenaka, Hirofumi, to Harumoto Iron Works Co., Ltd. Apparatus for stretching, loosening, and fixing a wire member. 4,641,816, Cl. 254-228.000.

Kishine, Nobuyuki; Imamura, Tetsuya; Yamauchi, Michihide; and Ootani, Tsuyoshi, to Kao Corporation. Magnetic head comprised of an improved base substance for high density magnetic recording. 4,642,720, Cl. 360-126.000.

Kitakata, Makoto, to NEC Corporation. Semiconductor device having registration mark for electron beam exposure. 4,642,672, Cl. 357-40.000.

Kitner, William M., to Vari-X. Automatic film threading apparatus for roll-film processors. 4,641,939, Cl. 354-313.000.

Kizaki, Masaharu: *See*—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.

Klann, Horst. Wrench for effecting screw connections of inaccessible parts of motor vehicles. 4,641,554, Cl. 81-55.000.

Klapper, Kenneth K.; and Boatwright, David A., to Westinghouse Electric Corp. Plugger guide for aligning an end plug and a fuel rod tube end. 4,641,408, Cl. 29-271.000.

Klein, Hans-Christof; Armonier, Ulrich; Oesterle, Hermann; and Jendroska, Juergen, to Alfred Teves GmbH. Device for the determination of rotational speed. 4,641,519, Cl. 73-129.000.

Kleinberg, Robert L.: *See*—
Chow, Edward Y.; and Kleinberg, Robert L., 4,641,724, Cl. 181-104.000.

Kleinschmit, Peter: *See*—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Klepesch, Philip H.: *See*—
Markovitch, Peter; and Klepesch, Philip H., 4,641,498, Cl. 60-641.200.

Klier, Kamil; Herman, Richard G.; and Vedage, Gamini A., to Lehigh University. Catalyst and method for production of methylamines. 4,642,381, Cl. 564-480.000.

Kling, John P.: *See*—
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,641,907, Cl. 339-147.00R.

Klinger, Barney, to Applied Energy, Inc. Enhanced recovery of subterranean deposits by thermal stimulation. 4,641,710, Cl. 166-303.000.

Klinvex, Daniel E.; Crusi, Suzanne B.; Kepes, William E.; and Vano, Joseph A., to Westinghouse Electric Corp. Universal tool for ultrasonic testing of nuclear reactor vessels. 4,642,215, Cl. 376-249.000.

Klohn, William L.: *See*—
Rice, James S.; and Klohn, William L., 4,641,850, Cl. 280-289.0WC.

Klueting, Bernd A., to Keiper Recaro Incorporated. Planetary seat back adjuster. 4,641,887, Cl. 297-362.000.

KMS Fusion, Inc.: *See*—
Tarvin, Jeffrey A., 4,641,524, Cl. 73-335.000.

Knies, Rudy D. Automatic latch between trailer and boat. 4,641,851, Cl. 280-414.100.

Knitter, Wayne L.: *See*—
Sturza, Mark A.; Knitter, Wayne L.; and Wu, Yi-Zen, 4,642,647, Cl. 342-415.000.

Knogo Corporation: *See*—
Pokalsky, Peter A., 4,642,613, Cl. 340-572.000.

Knops, Hans-Joachim: *See*—
Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.

Kobayashi, Hideyuki, to Aisin Seiki Kabushiki Kaisha. Control system and method for a power delivery system having a continuously variable ratio transmission. 4,641,553, Cl. 74-866.000.

Kobayashi, Kazuyoshi: *See*—
Ohta, Takahiro; Inuiya, Masafumi; Kobayashi, Kazuyoshi; and Murakami, Takashi, 4,642,700, Cl. 358-285.000.

Kobayashi, Tadashi, to Daikin Industries Ltd. Outdoor unit for an air conditioning apparatus of through-the-wall multitype. 4,641,503, Cl. 62-259.100.

Kobayashi, Toshiaki; Arakawa, Hiromichi; and Ohira, Tatsuo, to Nippon Zeon Co., Ltd. Vinyl chloride resin composition. 4,642,324, Cl. 524-559.000.

Kobayashi, Toshio; and Hishiki, Hideo, to Victor Company of Japan, Ltd. Picture correcting apparatus for use with in-line type color picture tube. 4,642,528, Cl. 315-368.000.

Kobayashi, Yoshio, to Murata Manufacturing Co., Ltd. TM-mode dielectric resonance apparatus. 4,642,591, Cl. 333-227.000.

Koerner, Andre F. Sound engine. 4,642,611, Cl. 340-385.000.

Koester, Klaus: *See*—
Kruse, Hans; Koester, Klaus; Carduck, Franz-Josef; Wilsberg, Heinz-Manfred; and Puchta, Rolf, 4,642,197, Cl. 252-98.000.

Koga, Hiroshi: *See*—
Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.

Kogawa, Kiyonori: *See*—
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.

Kogure, Katsura: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.

Kohatsu, Iwao: *See*—
Wood, Clayton D.; Garrou, Philip E.; Kohatsu, Iwao; and Gleason, Edward F., 4,642,302, Cl. 502-332.000.

Kohberg, Ewald: *See*—
Lohr, Karl-Heinz; Kohberg, Ewald; Kuchheuser, Werner; and Dorhmann, Wolfgang, 4,641,872, Cl. 293-133.000.

Kohda, Kazuo, to Victor Company of Japan, Ltd. Automatic tape loading type recording and/or reproducing apparatus having a plurality of modes. 4,642,712, Cl. 360-85.000.

Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd. Crystalline random propylene copolymer composition and composite laminate comprising said composition. 4,642,269, Cl. 428-516.000.

Koike, Takahisa: *See*—
Ito, Tadashi; Jinnai, Koichiro; Koike, Takahisa; Murai, Toshiharu; Fukazawa, Takao; and Ishima, Kazumi, 4,642,653, Cl. 346-1.100.

Koishi, Toshio: *See*—
Yasumura, Takashi; Koishi, Toshio; and Tanaka, Isao, 4,642,326, Cl. 525-153.000.

Koivula, Antti: *See*—
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.

Koken Co., Ltd.: *See*—
Kuroyanagi, Yoshimitsu; Miyata, Teruo; and Seno, Manabu, 4,642,118, Cl. 623-15.000.

Kokusai Denshindenwa Co., Ltd.: *See*—
Asakawa, Kenichi; Shirasaki, Yuichi; and Iwamoto, Yoshinao, 4,641,915, Cl. 350-96.180.

Kolberg, William. Portable self-powered band saw. 4,641,560, Cl. 83-788.000.

Kolblin, Karl, to Werner Thieme GmbH & Co. KG. Screen printing machine having a stationary printing table. 4,641,829, Cl. 271-268.000.

Kolev, Rusy C.: *See*—
Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., 4,641,791, Cl. 241-66.000.

Kollmorgen Technologies Corp.: *See*—
Morino, Ronald; and Conti, Joseph A., 4,641,773, Cl. 228-1.100.
Schoenberg, Andrew J.; and Friedrich, Marju L., 4,642,321, Cl. 523-400.000.

Komatsu, Akihiro: *See*—
Takanashi, Masami; and Komatsu, Akihiro, 4,641,723, Cl. 180-315.000.

Komiya, Yutaka: *See*—
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.

Komiyama, Yoshizo: *See*—
Miyazaki, Yoshihiko; Goto, Taizan; Komiyama, Yoshizo; and Iwata, Kotei, 4,641,603, Cl. 118-724.000.

Komori Printing: *See*—
Watanabe, Hideo, 4,642,456, Cl. 250-223.00R.

Komori Printing Machinery Co., Ltd.: *See*—
Watanabe, Hideo, 4,642,457, Cl. 250-223.00R.

Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, to Fuji Seiko Limited; and Toyota Jidosha Kabushiki Kaisha. Holder for rotary cutting tools. 4,642,005, Cl. 409-232.000.

Konecsny, Helmut: *See*—
Musselmann, Walter; and Konecsny, Helmut, 4,641,790, Cl. 241-46.170.

Konishi, Katsuo: *See*—
Furuhata, Takashi; Mohri, Katsuo; and Konishi, Katsuo, 4,642,708, Cl. 360-77.000.

Konov, Vyacheslav V.: *See*—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

Koppers Company, Inc.: *See*—
Okamoto, Yoshiyuki; and Vicari, Richard, 4,642,393, Cl. 568-734.000.

Korbuly, Gergely, to Hutchinson SA. Means for protecting support structures or similar from shocks. 4,641,999, Cl. 405-215.000.

Korner, Rudolf: *See*—
Ruthrof, Klaus; Korner, Rudolf; and Dorner, Jurgen, 4,642,417, Cl. 174-36.000.

Kornrumpf, William P.: *See*—
Steigerwald, Robert L.; and Kornrumpf, William P., 4,642,745, Cl. 363-37.000.

Korth, Hans-Erdmann, to International Business Machines Corporation. White light interferometer. 4,641,971, Cl. 356-357.000.

Kosugi, Motoki; and Nakano, Hidetaka, to Yamaichi Electric Mfg. Co., Ltd. Flat cable connecting system. 4,641,904, Cl. 339-99.00R.

Koth, Detley: *See*—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Kotzsch, Hans-Joachim: *See*—
Groh, Reiner; Kotzsch, Hans-Joachim; Strebny, Hans-Gunther; and Vahlensieck, Hans-Joachim, 4,642,363, Cl. 556-471.000.

Kouno, Shunzo: *See*—
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.

Koyase, Hiroyasu; Funaki, Kinsaku; and Morita, Atsuo, to Kashima Engineering Co., Ltd.; and Taiho Industrial Co., Ltd. Method of preventing deposition of sludge in liquid tank and of removing deposited sludge. 4,642,138, Cl. 134-22.180.

Koyo Seiko Kabushiki Kaisha: *See*—
Takata, Yatsuka; Yamada, Tadamasa; and Kikuchi, Eiki, 4,642,219, Cl. 420-104.000.

Koziol, Konrad; and Wenk, Erich, to Conradty GmbH & Co. Metallelektroden KG. Cell having coated valve metal electrode for electrolytic galvanizing. 4,642,173, Cl. 204-242.000.

Kraftwerk Union Aktiengeselischaft: *See*—
Ruthrof, Klaus; Korner, Rudolf; and Dorner, Jurgen, 4,642,417, Cl. 174-36.000.

Kral, Kevin D.; and Havenhill, Douglas D., to Sperry Corporation. Magnetic suspension and pointing system with flux feedback linearization. 4,642,501, Cl. 310-90.500.

Kramer, Nathan R., to Hughes Aircraft Company. Continuous in situ fiberization substrate material mechanism. 4,642,038, Cl. 425-93.000.

Kratz, Christer; Engstrom, Ake; and Karlsson, Goran. Contact arrangement. 4,642,427, Cl. 200-16.00C.

Krause, Johannes: *See*—
Ressel, Herbert; Haas, Hans; and Krause, Johannes, 4,642,224, Cl. 423-321.00R.

Krawchuk, Myron; and Spoganetz, Joseph C., to Foster Wheeler Energy Corporation. Fixture for explosively welding a tube to a tubesheet. 4,641,774, Cl. 228-2.500.

Krebs, Gerhard, to Andreas Stihl. Starter device for an internal combustion engine. 4,641,614, Cl. 123-185.0BA.

Kreft, Anthony F., III; Pattison, Thomas W.; and Musser, John H., to American Home Products Corporation. 3(2-quinolinylalkoxy)-phenols. 4,642,347, Cl. 546-181.000.

Kriegel, Carl P., to M.C.E. Window, Inc. Semi-manually operated service window. 4,641,460, Cl. 49-115.000.

Krolikowski, F. John; and Shahnarian, Albert. Non-traumatic bulbous catheter. 4,642,101, Cl. 604-164.000.

Krone GmbH: *See*—
Achtnig, Peter; and Hegner, Gunter, 4,642,723, Cl. 361-124.000.

Krstic, Slobodan: *See*—
Bielinski, Ralph F.; Jaeschke, James R.; Krstic, Slobodan; Piber, Earl T.; and Theisen, Peter J., 4,642,481, Cl. 307-252.0UA.

Kruse, Hans; Koester, Klaus; Carduck, Franz-Josef; Wilsberg, Heinz-Manfred; and Puchta, Rolf, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of a washing additive in tablet form. 4,642,197, Cl. 252-98.000.

Kublick, Christian: *See*—
Fischer, Dietmar; and Kublick, Christian, 4,642,475, Cl. 307-66.000.

Kuchheuser, Werner: *See*—
Lohr, Karl-Heinz; Kohberg, Ewald; Kuchheuser, Werner; and Dorhmann, Wolfgang, 4,641,872, Cl. 293-133.000.

Kudo, Satoshi, to Hitachi, Ltd. Fabricating an integrated circuit device having a vertical pnp transistor. 4,641,419, Cl. 29-591.000.

Kuhn, Donald H., to United States of America, Army. Dual lens antenna with mechanical and electrical beam scanning. 4,642,651, Cl. 343-754.000.

Kumada, Akio, to Hitachi Maxell, Ltd. Ultrasonic motor using bending, longitudinal and torsional vibrations. 4,642,509, Cl. 310-323.000.

Kumagami, Naoki: *See*—
Igarashi, Makoto; Okano, Kiichiro; and Kumagami, Naoki, 4,641,742, Cl. 198-627.000.

Kume, Takeshi, to Suehiro Seiko Kabushiki Kaisha. Chain saw guide bar and method of construction. 4,641,432, Cl. 30-383.000.

Kuo, Long-Cho: *See*—
Mar, Shih-Lin; and Kuo, Long-Cho, 4,641,844, Cl. 280-30.000.

Kupcikevicius, Vytautas, to Viskase Corporation. Casing article. 4,641,687, Cl. 138-118.100.

Kuramitsu, Wataru: *See*—
Okuda, Kazuhiro; Tanaka, Makoto; and Kuramitsu, Wataru, 4,641,830, Cl. 271-274.000.

Kuramoto, Nobuyuki; Takada, Kazuya; and Numata, Yoshihiko, to Tokuyama Soda Kabushiki Kaisha. Composite nitride sintered body. 4,642,298, Cl. 501-96.000.

Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, to Fujitsu Limited. Method for producing a multilayer ceramic circuit board. 4,642,148, Cl. 156-89.000.

Kuriyama, Takashi: *See*—
Hirosaki, Botaro; and Kuriyama, Takashi, 4,642,575, Cl. 331-1.00A.

Kurokawa, Yasuhiro: *See*—
Inoi, Takeshi; Akabane, Toshiaki; Kurokawa, Yasuhiro; and Matsuoka, Shingo, 4,642,287, Cl. 435-99.000.

Kuroyanagi, Yoshimitsu; Miyata, Teruo; and Seno, Manabu, to Koken Co., Ltd. Man-made skin composed of two layers: collagen and a poly-alpha-amino acid. 4,642,118, Cl. 623-15.000.

Kurywczak, Eugene. Ringgearless twin sun planetary power amplifier. 4,641,552, Cl. 74-802.000.

Kutz, Roland: *See*—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Kutzavitch, Walter G.: *See*—
Illuzzi, Vincent A.; Kutzavitch, Walter G.; and Rooney, Allen J., III, 4,642,550, Cl. 323-222.000.

Kyocera Corporation: *See*—
Yamashita, Yukio, 4,642,510, Cl. 310-348.000.

Kyowa Chemical Industry Co. Ltd.: *See*—
Miyata, Shigeo; Iizima, Noriko; and Manabe, Tadashi, 4,642,193, Cl. 210-682.000.

Kyushima, Hiroki: *See*—
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinor, 4,641,951, Cl. 355-7.000.

L. & C. Steinmuller GmbH: *See*—
Leikert, Klaus, 4,642,225, Cl. 423-244.000.

L. Schuler GmbH: *See*—
Braun, Hermann; Dumschat, Helmut; Strommer, Kurt; and Mueller, Sieghard, 4,641,515, Cl. 72-405.000.

LabAdapt, Inc.: *See*—
Batjer, John D.; Eades, Lindsay R.; Liedtke, Raymond J.; and Zebelman, Arthur M., 4,641,674, Cl. 134-138.000.

Labouliere, Elzear R.: *See*—
de Vos, Hendrik A. J.; and Labouliere, Elzear R., 4,642,742, Cl. 362-375.000.

LaCasse, Robert G.: *See*—
Creasy, Walter S.; Lorenz, Donald H.; LaCasse, Robert G.; and Malagreca, Salvatore A., 4,642,267, Cl. 428-413.000.

Lacey, Raymond D.: *See*—
Bradley, William D.; Alvi, Zia R.; and Lacey, Raymond D., 4,642,010, Cl. 411-69.000.

Lade, Robert W.; Benjamin, James A.; and Schutten, Herman P., to Eaton Corporation. Vertically layered MOMOM tunnel device. 4,642,665, Cl. 357-6.000.

Lagowski, Jacek: *See*—
Jastrzebski, Lubomir L.; and Lagowski, Jacek, 4,642,565, Cl. 324-158.00R.

Laird, Bruce A.; and Laird, Richard A. Athletic shoe for runner and joggers. 4,641,438, Cl. 36-59.00C.

Laird, Richard A.: *See*—
Laird, Bruce A.; and Laird, Richard A., 4,641,438, Cl. 36-59.00C.

Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, to Maremont Corporation. On-vehicle spring compressor tool. 4,641,814, Cl. 254-10.500.

Lampard, Robert D., to Barrack Technology; and Balaraba Pty. Limited. Internal combustion engine. 4,641,616, Cl. 123-256.000.

Lande, Goran; and Persson, Bendt, to Nitro Nobel AB; and AB Volvo. Means for splicing two pipes. 4,641,775, Cl. 228-2.500.

Landers, Jerry L.; and Fischer, Gregory E., to Servend International. Ice and beverage dispensing apparatus and method with dual purpose liner. 4,641,763, Cl. 222-129.100.

Landsberger, David; and Broeils, John, to Maddak, Inc. Battery operated eyewash system. 4,641,384, Cl. 4-620.000.

Lanfranconi, Gianmario; and Vecellio, Bernardino, to Societa' Cavi Pirelli S.p.A. Joint for interconnecting two electrical cables of different types. 4,642,415, Cl. 174-22.00R.

Lang, Egon: *See*—
Piotrowski, Bernhard; Buning, Robert; Janser, Bernhard; and Lang, Egon, 4,642,262, Cl. 428-296.000.

Langner, Jaroslav; and Weitemeyer, Christian, to Th. Goldschmidt AG. Fluoroalkylsilanes or siloxanes, their synthesis and use. 4,642,356, Cl. 549-214.000.

Lannen Tehtaat Oy: *See*—
Saarinen, Kari, 4,642,014, Cl. 414-96.000.

Lardon, Marcel: *See*—
Moll, Eberhard; Lardon, Marcel; and Muller, Edgar, 4,641,450, Cl. 42-76.020.

Larson, Kim A. Electronic playing die. 4,641,840, Cl. 273-138.00A.

Lassithiotakis, Konstantin: *See*—
Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, 4,641,537, Cl. 73-861.120.
Jacobsen, Hans E.; Hansen, Henning M.; Nyrup, John; Hansen, Henry; and Lassithiotakis, Konstantin, 4,641,536, Cl. 73-861.120.

Lauer, John F.; Greenberg, Ronald; and Van De Walle, Raymond A. Synthetic seaweed kit and synthetic seaweed matrix formed thereby. 4,641,997, Cl. 405-24.000.

Laure Prosthetics, Inc.: *See*—
Steffee, Arthur D., 4,642,122, Cl. 623-21.000.

Lautenschlager, Horst, to Karl Lautenschlager KG, Mobelbeschlagfabrik. Cabinet hinge. 4,641,393, Cl. 16-241.000.

Lavelle, Michael G., to Motorola Computer Systems, Inc. Video memory controller. 4,642,789, Cl. 364-900.000.

Lavelle, Michael G.; Goldsmith, Claude A.; and Kingsbury, Allin D., to Motorola Computer Systems, Inc. Video update FIFO buffer. 4,642,794, Cl. 364-900.000.

Lawrence, Manuel. Valve-spring tool. 4,641,521, Cl. 73-161.000.

Lawton, Rodney J., to Plessey Overseas Limited. Amplitude variation suppression arrangements. 4,642,490, Cl. 307-540.000.

Laxton, Raymond: *See*—
Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, 4,642,685, Cl. 358-84.000.

Lazzati, Jean P., to U.S. Philips Corporation. Photographic shutter of the focal-plane type. 4,641,938, Cl. 354-243.000.

Learn, Arthur J.; and DuBois, Dale R., to Anicon, Inc. Chemical vapor deposition wafer boat. 4,641,604, Cl. 118-728.000.

LeBegue, Maurice K.; and Wilson, Henry E., to National Mine Service Company. Material gathering device for a mining machine. 4,641,888, Cl. 299-64.000.

Lee, Kenneth R.: *See*—
Cedrone, Nicholas J.; and Lee, Kenneth R., 4,641,738, Cl. 193-40.000.

Lee, Kuo-Hua, to AT&T Bell Laboratories. Metalization process for headless contact using deposited smoothing material. 4,641,420, Cl. 29-511.000.

Lee, Minyoung: *See*—
Thomas, Charles E.; Lee, Minyoung; Bedard, James F.; and Hayashi, Steven R., 4,642,617, Cl. 340-680.000.

Le Gal, Pascal: *See*—
Dubuisson, Jacques; Le Gal, Pascal; and Boutterin, Rene , 4,641,425, Cl. 29-830.000.

Lehigh University: *See*—
Klier, Kamil; Herman, Richard G.; and Vedage, Gamini A., 4,642,381, Cl. 564-480.000.

Lehmann, Ernesto: *See*—
Thalmann, Alfred; Lehmann, Ernesto; Roth, Emil; and Gerber, Walter, 4,642,154, Cl. 156-272.200.

Lehnerer, Patrick: *See*—
Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, 4,641,814, Cl. 254-10.500.

Leikert, Klaus, to L. & C. Steinmuller GmbH. Method of binding sulfur compounds by adding additives. 4,642,225, Cl. 423-244.000.

Leiner, Dennis C.: *See*—
Prescott, Rochelle; and Leiner, Dennis C., 4,641,927, Cl. 350-413.000.

Leir, Charles M., to Riker Laboratories, Inc. Process for the preparation of derivatives of pyrrolidine and piperidine. 4,642,384, Cl. 568-337.000.

LeMay, Christopher A. G., to EMI Limited. Robot control systems. 4,642,540, Cl. 318-568.000.

Lemelson, Jerome H. Magnetic recording and reproduction apparatus, system and method. 4,642,705, Cl. 360-18.000.

Leming, Anthony D.; and Dawson, Luther C. Hedge trimmer. 4,641,431, Cl. 30-276.000.

Lemmers, Robert E.; Safran, Frank; and Brussee, Warren T., to General Electric Company. Automated inspection system. 4,641,966, Cl. 356-237.000.

Lenhan, Terrence A.: *See*—
Glodis, Paul F.; and Lenhan, Terrence A., 4,641,917, Cl. 350-96.330.

Lenk, Erich: *See*—
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,641,504, Cl. 68-5.00E.

Lentz, Frank R.: *See*—
Blevins, Gerald G.; Johnson, Fred, Jr.; Lentz, Frank R.; and Root, John P., 4,641,407, Cl. 29-237.000.

Leonard Storch Enterprises, Inc.: *See*—
Storch, Leonard; and Hotto, Robert, 4,642,624, Cl. 340-735.000.

LePage, James: *See*—
Moffatt, Michael; LePage, James; and Englar, Gerald, 4,641,918, Cl. 350-125.000.

Lepper, James M., to American Hospital Supply Corp. Cardiac flow monitor. 4,641,658, Cl. 128-633.000.

Lerner, Moisey. Bookkeeping and accounting system. 4,642,767, Cl. 364-406.000.

Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, to Compagnie des Transmissions Mecaniques Sedis; Generale de Transport et d'Industrie; and Societe Auxiliaire de Manutention Acceleree de Denrees Alimentaires & Carrosserie Trouillet. Automatic device for loading the total volume of a transport vehicle. 4,642,018, Cl. 414-502.000.

Letbetter, William D.: *See*—
Seydel, Scott O.; Letbetter, William D.; and Cutts, William H., 4,641,404, Cl. 28-178.000.

Lever Brothers Company: *See*—
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., 4,642,198, Cl. 252-94.000.

Levine, James L.: *See*—
Garwin, Richard L.; and Levine, James L., 4,642,422, Cl. 178-18.000.

Levine, Peter A., to RCA Corporation. Back-illuminated CCD imager adapted for contrast transfer function measurements thereon. 4,641,963, Cl. 356-124.500.

Leviton Manufacturing Company, Inc.: *See*—
Poliak, John M.; and Anker, Herbert, 4,641,905, Cl. 339-103.00B.

Lewbart, Harry M., to Campbell Soup Company. Apparatus for cleaning dish-like objects. 4,641,672, Cl. 134-62.000.

Lewis, Meirion F., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Surface acoustic wave device with reflectors in inter-electrode location. 4,642,506, Cl. 310-313.00D.

Lewis, Robert T.; and Tudor, Thomas T., to Brown & Williamson Tobacco Corporation. Package for cigarettes and the like. 4,641,748, Cl. 206-263.000.

Lewus, Alexander J. Static phase conversion circuits for three-phase motors. 4,642,545, Cl. 318-749.000.

Leyland Vehicles Limited: *See*—
Greenwood, C. J., 4,641,548, Cl. 74-691.000.

Liang, Tzu P.: *See*—
Tzen, Ching B.; and Liang, Tzu P., 4,641,436, Cl. 33-483.000.

Lidow, Alexander; and Herman, Thomas, to International Rectifier Corporation. High power MOSFET with low on-resistance and high breakdown voltage. 4,642,666, Cl. 357-23.400.

Liedtke, Raymond J.: *See*—
Batjer, John D.; Eades, Lindsay R.; Liedtke, Raymond J.; and Zebelman, Arthur M., 4,641,674, Cl. 134-138.000.

Liepse, Donald E. Fryer filter and pump. 4,642,184, Cl. 210-240.000.

Lietz Company, The: *See*—
Martin, Robert H.; Rozelle, Bradley J.; and Breier, Thomas J., 4,641,804, Cl. 248-205.100.

Lightfoot, Fred M., to Boeing Company, The. Passive ranging method and apparatus using interferometric scanning. 4,642,649, Cl. 342-458.000.

Lim, Wah L.: *See*—
Gustafson, Harry A.; Lim, Wah L.; and Zeman, Francis H., 4,641,970, Cl. 356-350.000.

Lin, Santa H. C.; and Cho, Myong J., to Ralston Purina Company. Process for the production of a mineral fortified protein composition. 4,642,238, Cl. 426-74.000.

Lin, Tung Y., to United States of America, Navy. Anchoring system for concrete floating pier. 4,642,000, Cl. 405-221.000.

Lincoln, Phillip A.: *See*—
Van Antwerp, William P.; and Lincoln, Phillip A., 4,642,134, Cl. 75-101.00R.

Lindauer Dornier Gesellschaft mbH: *See*—
Gehring, Fritz, 4,641,688, Cl. 139-450.000.

Lindner, Daniel J., to Goodyear Tire & Rubber Company, The. Tread for a pneumatic tire. 4,641,695, Cl. 152-209.00A.

Link, Charles M., II: *See*—
Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, 4,642,425, Cl. 379-57.000.

Link, Helmut D.; and Keller, Arnold, to Waldemar Link GmbH & Co. Holding stand for surgical instruments. 4,641,749, Cl. 206-370.000.

Lisle, Thomas K., Jr.: *See*—
Wise, Carl D.; Hays, Frank W.; and Lisle, Thomas K., Jr., 4,642,644, Cl. 342-14.000.

Litchford, George B.: *See*—
Hulland, Burton L.; and Litchford, George B., 4,642,648, Cl. 342-455.000.

Litchstreet Co.: *See*—
Hulland, Burton L.; and Litchford, George B., 4,642,648, Cl. 342-455.000.

Litton Systems, Inc.: *See*—
Sturza, Mark A.; Knitter, Wayne L.; and Wu, Yi-Zen, 4,642,647, Cl. 342-415.000.

Livingston, David R., to Texaco Inc. Purification of methacrylamidopropyltrimethylammonium chloride. 4,642,380, Cl. 564-206.000.

Lloyd, Kenneth O.: *See*—
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240.000.

Locke, Charles H.: *See*—
Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinckney, Warren J.; and Wilson, Alan D., 4,642,438, Cl. 219-121.00L.

Loctite (Ireland) Limited: *See*—
Harris, Stephen J.; Woods, John G.; and Rooney, John M., 4,642,362, Cl. 556-419.000.

Lodge, Robert H.: *See*—
Phillips, Ian R.; Lodge, Robert H.; and Bunyan, Glen W., 4,642,099, Cl. 604-136.000.

Loew, Albin: *See*—
Boehm, Peter; Volz, Peter; Bischoff, Gilbert; Booten, Sigmund; Engert, Klaus; and Loew, Albin, 4,641,568, Cl. 91-369.00A.

Lohn, Gerd, to Kaltenbach & Voigt GmbH & Co. Dental handpiece. 4,642,051, Cl. 433-100.000.

Lohr, Karl-Heinz; Kohberg, Ewald; Kuchheuser, Werner; and Dorhmann, Wolfgang, to Boge GmbH. Collision damper having a damping piston and a deformable tube connected thereto. 4,641,872, Cl. 293-133.000.

Lohr, Thomas E., to Allen Industries, Inc. Method and apparatus for making a sheet of material. 4,642,153, Cl. 156-296.000.

Lollis, Charles A.: *See*—
Cobb, Ronald W.; Lollis, Charles A.; and Crane, Nancy S., 4,641,448, Cl. 40-606.000.

Lombardi, Michel; and Gerard, Jean-Louis, to Societe Anonyme D.B.A. Assembly component for a disc brake. 4,641,730, Cl. 188-73.450.

Lombardi, Steven A.; and Potter, David O., to Motorola, Inc. Power distribution device. 4,642,479, Cl. 307-141.000.

London, Jack W.: *See*—
Kapland, Mitchell A.; Norikane, Kiyoshi; and London, Jack W., 4,641,449, Cl. 42-65.000.

Lone Star Industries, Inc.: *See*—
Heitzmann, Richard F.; Fitzgerald, Mark; and Sawyer, James L., 4,642,137, Cl. 106-85.000.

Long, Jerry M.; and Womack, James A., to Innovative Concepts, Inc. Portable hanging file and desk top display for floppy disks. 4,641,897, Cl. 312-183.000.

Long Reach Manufacturing Co.: *See*—
Sinclair, Stuart W., 4,642,020, Cl. 414-621.000.

Longacre, James R.: *See*—
Clayman, Henry; and Longacre, James R., 4,642,116, Cl. 623-6.000.

Look, Raymond J.: *See*—
Hughes, Richard L.; Turney, Anthony W.; and Look, Raymond J., 4,642,480, Cl. 307-147.000.

Lopresti, William J. Bearing-less positive displacement flowmeter. 4,641,522, Cl. 73-261.000.

L'Oreal: *See*—
Arnaud, Jean-Claude; and Bore, Pierre, 4,642,294, Cl. 436-5.000.

Lorenz, Donald H.: *See*—
Creasy, Walter S.; Lorenz, Donald H.; LaCasse, Robert G.; and Malagreca, Salvatore A., 4,642,267, Cl. 428-413.000.

Lorenzi, Donald E.; Wagerer, Helmut F.; and Spevak, Lev, to Magnaflux Pipeline Services, Inc. Pipeline inspection device using ultrasonic apparatus for corrosion pit detection. 4,641,529, Cl. 73-601.000.

Losel, Walter, to U.S. Philips Corporation. Circuit arrangement for feeding the regulation and control device of a regulated direct voltage converter. 4,642,746, Cl. 363-49.000.

Louis, Michel: *See*—
Bard, Max; Sibilo, Gerard; Marello, Georges; Viale, Daniel; and Louis, Michel, 4,641,985, Cl. 403-16.000.

Louis, Raymond, to Gaz de France. Process for preheating a combustive gas by means of combustion gases and preheating device associated with a burner for carrying out the said process. 4,642,049, Cl. 432-223.000.

Loveless, Frederick C., to Uniroyal Chemical Company, Inc. Catalytic poly alpha-olefin process. 4,642,410, Cl. 585-524.000.

Lowe, James H. C., to Degussa Electronics Inc. Continuous casting method and ingot produced thereby. 4,641,704, Cl. 164-474.000.

Lowenfeld, Simon: *See*—
Kemper, Christian T.; Lowenfeld, Simon; and Fox, Mark S., 4,642,782, Cl. 364-550.000.

Lowry, John D.; and Lucas, Keith, to Scientific Atlanta, Inc. Method and apparatus for creating encrypted and decrypted television signals. 4,642,688, Cl. 380-11.000.

Loy, Fernand R., to U.S. Philips Corporation. Dual magnification telescope. 4,641,931, Cl. 350-538.000.

Loy, Fernand R., to U.S. Philips Corporation. Semiactive night viewing system. 4,642,452, Cl. 250-213.0VT.

Lubrizol Corporation, The: *See*—
Quinn, Robert E., 4,642,330, Cl. 528-335.000.

Lucas Industries public limited company: *See*—
Chalke, Brian J., 4,641,612, Cl. 123-145.00A.
Howes, Peter, 4,641,784, Cl. 239-453.000.
Rohsler, Ivor C.; and Clark, Anthony F. C., 4,642,671, Cl. 357-79.000.

Lucas, Keith: *See*—
Lowry, John D.; and Lucas, Keith, 4,642,688, Cl. 380-11.000.

Lucy, Andrew R.; and Morris, George E., to British Petroleum Company p.l.c., The. Oxidative carbonylation to make dicarboxylic acid esters. 4,642,374, Cl. 560-204.000.

Lund, David: *See*—
Mullane, William E.; and Lund, David, 4,642,442, Cl. 219-10.410.

Lundberg, Krister; Tidstam, Goran; and Pope, Daniel F., to AB Bonnierforetagen. Method and apparatus for measuring the content of suspended substances in a flowing medium. 4,641,969, Cl. 356-343.000.

Lundin, Robert S.; and Petritis, Demetris, to Superior Electric Company, The. Means to improve performance of electric motors. 4,642,494, Cl. 310-49.00R.

Lundquist, Ingemar, to Valleylab, Inc. IV system and controller and combination IV filter and pump assembly for use therein and method. 4,642,098, Cl. 604-123.000.

Lux, Benno: *See*—
Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, 4,642,135, Cl. 420-33.000.

Lynch, David D., Jr.; and Bell, William H. Terminally guided weapon delivery system. 4,641,801, Cl. 244-3.140.

Lynch, James P. Collapsible canopy structure. 4,641,676, Cl. 135-110.000.

M.C.E. Window, Inc.: *See*—
Kriegel, Carl P., 4,641,460, Cl. 49-115.000.

Mack, Alfred: *See*—
Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinckney, Warren J.; and Wilson, Alan D., 4,642,438, Cl. 219-121.00L.

MacLaurin, Blair K.: *See*—
Suthers, Mark S.; Este, Grantley O.; Streater, Richard W.; and MacLaurin, Blair K., 4,642,507, Cl. 310-313.00B.

MacMinn, Stephen R., to General Electric Company. Starting sequence for reluctance motor drives operating without a shaft position sensor. 4,642,543, Cl. 318-696.000.

Macy, Arnel M.: *See*—
Fearon, William W.; and Macy, Arnel M., 4,641,726, Cl. 181-292.000.

Maddak, Inc.: *See*—
Landsberger, David; and Broeils, John, 4,641,384, Cl. 4-620.000.

Maddi, Frank J., to Joule' Inc. Pipe hanger extension clip. 4,641,989, Cl. 403-302.000.

Mader, Leopold: *See*—
Vollmann, Norbert; and Mader, Leopold, 4,642,706, Cl. 360-74.300.

Madison, Theodore N.: *See*—
Murtha, Eugene A.; Johnson-Williams, Mark B.; Madison, Theodore N.; and Cartabiano, Michael C., 4,642,710, Cl. 360-79.000.

Maeda, Katsuji: *See*—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.

Maeda, Kiyoshi; and Ueyama, Tsutomu, to Dainippon Screen Mfg. Co., Ltd. Device of switching a scanning beam diameter. 4,642,701, Cl. 358-296.000.

Magee, Terence E., to Standard Telephones & Cables. Integrated circuits. 4,642,667, Cl. 357-35.000.

Magnaflux Pipeline Services, Inc.: *See*—
Lorenzi, Donald E.; Wagerer, Helmut F.; and Spevak, Lev, 4,641,529, Cl. 73-601.000.

Magnetic Peripherals, Inc.: *See*—
Janssen, Robert A.; and Sorenson, Gary D., 4,642,246, Cl. 427-127.000.

Mahabir, Aloysius G.: *See*—
Vincent, David; and Mahabir, Aloysius G., 4,642,725, Cl. 361-154.000.

MAI Basic Four, Inc.: *See*—
Kirk, Glenn D., 4,642,748, Cl. 363-56.000.

Maisch, Wolfgang; and Treiber, Jurgen, to Robert Bosch GmbH. Electric potentiometer. 4,642,602, Cl. 338-162.000.

Majewski, Donna M.; and Morganson, Stephen A., to Economics Laboratory, Inc. Treatment of fabrics in machine dryers using treating means containing fabric treating composition having resistance to change in viscosity and release rate with temperature change. 4,642,258, Cl. 428-68.000.

Makarova, Evgenia S.: *See*—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

Makinen, Juho K.; Peuralinna, Mauri J.; and Aaltonen, Olavi A., to Outokumpu Oy. Process for chlorinating volatilization of metals which are present in oxidic iron ores or concentrates. 4,642,133, Cl. 75-2.000.

Makovec, Francesco: *See*—
Senin, Paolo; Makovec, Francesco; and Rovati, Luigi, 4,642,340, Cl. 536-55.200.

Malagreca, Salvatore A.: *See*—
Creasy, Walter S.; Lorenz, Donald H.; LaCasse, Robert G.; and Malagreca, Salvatore A., 4,642,267, Cl. 428-413.000.

Malguarnera, Salvatore C., to NL Industries, Inc. Flowmeter. 4,641,535, Cl. 73-861.010.

Malkia, Hannu: *See*—
Hanhikoski, Hannu; Kalliola, Lauri; and Malkia, Hannu, 4,642,164, Cl. 162-207.000.

Mallinckrodt, Inc.: *See*—
Cantrell, Gary L., 4,642,398, Cl. 568-937.000.
White, Carl R., 4,642,399, Cl. 568-938.000.

Mallozzi, Joseph; Dinan, David E.; and Daniels, Edward P., to Pitney Bowes Inc. Interface for mailing system peripheral devices. 4,642,791, Cl. 364-900.000.

Manabe, Tadashi: *See*—
Miyata, Shigeo; Iizima, Noriko; and Manabe, Tadashi, 4,642,193, Cl. 210-682.000.

Mandelman, Jack A.: *See*—
Kenney, Donald M.; and Mandelman, Jack A., 4,642,491, Cl. 307-571.000.

Mao, Nai-Hsien, to United States of America, Energy. Shear wave transducer for stress measurements in boreholes. 4,641,520, Cl. 73-151.000.

Mar, Shih-Lin; and Kuo, Long-Cho. Babyler folding baby stroller for multiple uses. 4,641,844, Cl. 280-30.000.

Marchand, Pierre: *See*—
Hooper, Anthony W.; Cormack, Alexander D.; and Marchand, Pierre, 4,642,015, Cl. 414-325.000.

Marchesi, Franco, to Rockwell-Rimoldi S.p.A. Upper looper provided with a hole and used for making an overedge stitch with three threads in sewing machines. 4,641,592, Cl. 112-162.000.

Marello, Georges: *See*—
Bard, Max; Sibilo, Gerard; Marello, Georges; Viale, Daniel; and Louis, Michel, 4,641,985, Cl. 403-16.000.

Maremont Corporation: *See*—
Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, 4,641,814, Cl. 254-10.500.

Marie, Jean-Pierre E., to Mors. Device for locking and releasing objects intended for public use, such as luggage carts. 4,641,739, Cl. 194-253.000.

Markovic, Milan: *See*—
Fucito, Dermot T.; Paul, James E.; and Markovic, Milan, 4,642,583, Cl. 333-14.000.

Markovitch, Peter; and Klepesch, Philip H., to Geothermal Energy Development Corporation. Geothermal turbine. 4,641,498, Cl. 60-641.200.

Markstein, Peter W.: *See*—
Auslander, Marc A.; Hopkins, Martin E.; and Markstein, Peter W., 4,642,764, Cl. 364-300.000.
Cocke, John; Markstein, Peter W.; and Markstein, Victoria I., 4,642,765, Cl. 364-300.000.

Markstein, Victoria I.: *See*—
Cocke, John; Markstein, Peter W.; and Markstein, Victoria I., 4,642,765, Cl. 364-300.000.

Markus, Jan J. G. Device for opening and closing a sliding-door. 4,641,462, Cl. 49-460.000.

Marshall, Michael S.; and Ingham, Vernon R., to MG Industries. Palletized cylinder distribution system. 4,642,007, Cl. 410-78.000.

Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, to Roussel Uclaf. Novel process for preparation of 1-furenyl-2,2-dimethyl-cyclopropane carboxylic acid derivatives. 4,642,372, Cl. 560-124.000.

Martensson, Olof, IV, to Awnings Unlimited, Inc. Awning support system. 4,641,805, Cl. 248-273.000.

Martin, Robert H.; Rozelle, Bradley J.; and Breier, Thomas J., to Lietz Company, The. Article supporting bracket for survey tripod. 4,641,804, Cl. 248-205.100.

Martin, Thomas S. Face mask. 4,641,379, Cl. 2-9.000.

Martinez, Antonio, Jr., to Atel Corporation. Brake rod extension indicator. 4,642,603, Cl. 340-52.00B.

Marutamaya Ogatsu Fireworks Co., Ltd.: *See*—
Ogatsu, Motohiro, 4,641,580, Cl. 102-217.000.

Maruyama, Kiyoshi: *See*—
Iimura, Kyosuke; and Maruyama, Kiyoshi, 4,641,896, Cl. 312-110.000.

Marzenell, Klaus: *See*—
Michel, Helmut; Marzenell, Klaus; Kampe, Wolfgang; Bartsch, Wolfgang; and Schaumann, Wolfgang, 4,642,309, Cl. 514-269.000.

Masaru, Yasui, to Stanley Electric Co., Ltd. Method and apparatus for disposing dust produced during amorphous silicon film-forming process. 4,642,208, Cl. 264-37.000.

Maschinenfabrik Rieter AG: *See*—
Mondini, Giancarlo; Hefti, Walter; and Kaufmann, Siegfried, 4,641,397, Cl. 19-258.000.

Masek, Jaroslav: *See*—
Heiniger, Peter; Masek, Jaroslav; and Senn, Herbert, 4,642,025, Cl. 415-139.000.

Masek, Jiri: *See*—
Smith, Rodney M.; and Masek, Jiri, 4,641,569, Cl. 92-43.000.

Mashimo, Satoshi; Kakiuchi, Hajime; and Nakajima, Masayoshi, to Mitsuboshi Belting Ltd. Power transmission belt. 4,642,082, Cl. 474-260.000.

Mashino, Keiichi, to Hitachi, Ltd. Control apparatus for charging generator. 4,642,548, Cl. 322-25.000.

Massachusetts Institute of Technology: *See*—
Harman, Theodore C., 4,642,142, Cl. 148-171.000.

Masuch, Gerhard; and Riedel, Claus, to Hauni-Werke Korber & Co. KG. Method and apparatus for supplying wrapping material to cigarette packing and like machines. 4,641,771, Cl. 226-115.000.

Masuda, Shunsuke: *See*—
Yamamoto, Masatoshi; Kawai, Yasushi; Shudo, Katsuyoshi; Kato, Hiroyuki; and Masuda, Shunsuke, 4,642,437, Cl. 219-84.000.

Masuda, Tatsuo; Enokimoto, Akito; and Ohtsuka, Kazutoshi, to Honda Giken Kogyo Kabushiki Kaisha. Wheel suspension for a vehicle. 4,641,854, Cl. 280-701.000.

Masumoto, Tsuyoshi; Inoue, Akihisa; and Tomioka, Hiroyuki, to Masumoto, Tsuyoshi; and Unitika Ltd. Nickel alloy. 4,642,145, Cl. 148-336.000.

Masuzawa, Tokihiko; Kageyama, Yoshitaka; and Tomita, Norizou, to Mitsubishi Rayon Company, Ltd. Light diffuser. 4,642,736, Cl. 362-31.000.

Mathais, Henri: *See*—
Cheminal, Bernard; Mathais, Henri; and Thomarat, Marc, 4,642,386, Cl. 568-405.000.

Matifas, Rene , to Societe Nationale Industrielle Aerospatiale. Machining device provided with a blank-press connected to the tool and blank-press for such a device. 4,642,004, Cl. 409-136.000.

Matsko, Joseph J.; Grunert, Kurt A.; and Terhorst, Bruce R., to Westinghouse Electric Corp. Solenoid operator circuit for molded case circuit breaker. 4,642,726, Cl. 361-198.000.

Matsubara, Osamu: *See*—
Suzuki, Toshiro; and Matsubara, Osamu, 4,642,552, Cl. 323-315.000.

Matsubara, Sunao: *See*—
Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, 4,642,412, Cl. 136-244.000.

Matsuda, Shinichi; and Seki, Kazuhisa, to Fuji Photo Optical Co., Ltd. Mechanism for lifting and lowering magnetic head in magnetic recording and reproducing device. 4,642,717, Cl. 360-105.000.

Matsuda, Shohei: *See*—
Sato, Makoto; and Matsuda, Shohei, 4,641,893, Cl. 303-113.000.

Matsuda, Tsuyoshi: *See*—
Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.

Matsui, Shinichi: *See*—
Yamagishi, Koji; Fuse, Takahiro; Kawamura, Masao; and Matsui, Shinichi, 4,642,694, Cl. 358-236.000.

Matsumoto, Kazuo; and Takashima, Kohki, to Tanabe Seiyaku Co., Ltd. Furyloxazolylacetic acid derivatives and processes for preparing same. 4,642,313, Cl. 514-374.000.

Matsumoto, Muneaki; and Numata, Koji, to Nippon Soken, Inc. Automobile route information display. 4,642,776, Cl. 364-449.000.

Matsumoto, Norio; Okuda, Shinya; Ohkuma, Osamu; and Seino, Mituyoshi, to Fujitsu Limited. Printer with pivotable print head attached to medium carrier moveable through a casing opening. 4,641,980, Cl. 400-120.000.

Matsumura, Susumu: *See*—
Tsunekawa, Tokuichi; Sato, Yuichi; Kawabata, Takashi; and Matsumura, Susumu, 4,642,451, Cl. 250-201.000.

Matsunaga, Ichiro; and Sugai, Hiroshi, to Sumitomo Metal Mining Co., Ltd. Method of treating low-level radioactive waste. 4,642,203, Cl. 252-631.000.

Matsuno, Hiromitsu; Murayama, Seiichi; and Ono, Tetsuo, to Hitachi, Ltd. Stain resistant fluorescent lamp. 4,642,512, Cl. 313-25.000.

Matsuoka, Kazuhiko; Usui, Masayuki; Minoura, Kazuo; Baba, Takesi; and Someya, Atsushi, to Canon Kabushiki Kaisha. Optical element having the function of changing the cross-sectional intensity distribution of a light beam. 4,641,920, Cl. 350-173.000.

Matsuoka, Shingo: *See*—
Inoi, Takeshi; Akabane, Toshiaki; Kurokawa, Yasuhiro; and Matsuoka, Shingo, 4,642,287, Cl. 435-99.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kanehisa, Takashi; and Yokomakura, Mitsunori, 4,642,517, Cl. 313-495.000.

Matsuzaka, Eiichi: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, 4,642,730, Cl. 361-315.000.

Matsuzaka, Takashi: *See*—
Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.

Mattes, M. Jules: *See*—
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240.000.

Mattox, Ernest M., to Portable Isokinetics, Inc. Wrist/ankle exercising apparatus. 4,641,832, Cl. 272-67.000.

Matzner, Markus; and Papuga, Donald M., to Amoco Corporation. Novel polyetherimides. 4,642,327, Cl. 525-434.000.

Maurice, Thomas A. Security device for real estate brokers. 4,641,505, Cl. 70-63.000.

Mayes, James T.: *See*—
Cooper, Neil; and Mayes, James T., 4,642,284, Cl. 435-7.000.

Mayr, Ernst: *See*—
Oestreich, Ulrich; and Mayr, Ernst, 4,641,916, Cl. 350-96.230.

Mazda Motor Corporation: *See*—
Okimoto, Haruo; Mithui, Syuzi; and Ebino, Hiroshi, 4,641,619, Cl. 123-479.000.
Tanaka, Yoshimichi, 4,641,609, Cl. 123-41.82R.
Yoshimura, Takeshi; Sameshima, Mutsuro; Nakanishi, Toru; and Kato, Shigeo, 4,641,620, Cl. 123-432.000.

McBeth, James, to Teleflex Incorporated. Axial piston pump including ball piston. 4,642,032, Cl. 417-269.000.

McCabe, Raymond T. Scaffold system. 4,641,728, Cl. 182-146.000.

McCarthy, Timothy D.; Christians, Scott T.; and Olmstead, A. Dale, to Motorola, Inc. Field presettable electronic odometer. 4,642,787, Cl. 364-561.000.

McCloy, W. Stuart, Jr.: *See*—
Demonbreun, Betty J., 4,641,507, Cl. 70-339.000.

McCloy, W. Stuart, Sr.: *See*—
Demonbreun, Betty J., 4,641,507, Cl. 70-339.000.

McCrea, David G.; and McCrea, Thomas E. Covered field sprayers. 4,641,781, Cl. 239-159.000.

McCrea, Thomas E.: *See*—
McCrea, David G.; and McCrea, Thomas E., 4,641,781, Cl. 239-159.000.

McDaniel, Kenneth G., to Texaco Inc. Modified terephthalic ester polyols and rigid foams therefrom. 4,642,319, Cl. 521-175.000.

McDavid, James M., to Texas Instruments Incorporated. Process for making molybdenum gate and titanium silicide contacted MOS transistors in VLSI semiconductor devices. 4,641,417, Cl. 29-571.000.

McEachern, Alexander; and Terry, Steve, to Basic Measuring Instruments. Power line impulse measurement system. 4,642,563, Cl. 324-111.000.

McElreath, Kenneth W.: *See*—
Centala, John P.; and McElreath, Kenneth W., 4,642,774, Cl. 364-434.000.

McGary, Charles W.: *See*—
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., 4,642,242, Cl. 427-2.000.

McGrew, Gordon N.: *See*—
Reed, Michael A.; and McGrew, Gordon N., 4,642,235, Cl. 426-5.000.

McKeand, Alexander W., to Ferranti plc. Velocity control systems. 4,642,542, Cl. 318-636.000.

McKelvy, Marvin D., to A. B. Chance Company. Electrically insulated temporary aerial platform. 4,641,727, Cl. 182-46.000.

McKennie, Dale E.: *See*—
O'Brien, Terrence X.; and McKennie, Dale E., 4,641,779, Cl. 238-7.000.

McKenzie Taxidermy Supply, Inc.: *See*—
Powell, Leon T., 4,642,209, Cl. 264-46.400.

MCM Laboratories, Inc.: *See*—
Mok, Walter Y. W., 4,641,650, Cl. 128-303.100.
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., to Berkley and Company, Inc. Coupling for flexible tubing. 4,641,860, Cl. 285-38.000.
McNair, Bruce E., to AT&T Information Systems Inc. Cryptographic transmission system. 4,642,424, Cl. 380-48.000.
McNeil Corporation: *See*—
Cook, John F., 4,642,614, Cl. 340-608.000.
McNiff, Timothy K.: *See*—
Hyde, Edward A.; and McNiff, Timothy K., 4,642,403, Cl. 585-415.000.
Mead Johnson & Company: *See*—
Temple, Davis L., Jr., 4,642,345, Cl. 544-251.000.
Meaden, Dan F., to International Computers Limited. Many-to-one mapping hash address generator. 4,642,793, Cl. 364-900.000.
Meakin, Brian J.: *See*—
Davies, David J. G.; Meakin, Brian J.; and Rees, John E., 4,642,234, Cl. 424-78.000.
Meddles, Dennis, to International Rectifier Corporation. Molding process for semiconductor devices and lead frame structure therefor. 4,641,418, Cl. 29-588.000.
Meddles, Dennis, to International Rectifier Corporation. Four-leaded dual in-line package module for semiconductor devices. 4,642,419, Cl. 174-52.0FP.
Medtronic, Inc.: *See*—
Smits, Karel F. A. A., 4,641,656, Cl. 128-419.00D.
Meeuwis, Johannes C. M.: *See*—
Kasperkovitz, Wolfdietrich G.; and Meeuwis, Johannes C. M., 4,642,482, Cl. 307-264.000.
Megabit Communications, Inc.: *See*—
Milligan, James H., 4,642,629, Cl. 340-825.000.
Meighen, Terrence: *See*—
Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., 4,641,901, Cl. 339-14.00R.
Meister, Siegfried. Apparatus for the steam treatment of foods. 4,641,630, Cl. 126-20.000.
Meller, Moshe. Illuminated dental drill. 4,642,738, Cl. 362-119.000.
Melvin, Lawrence S., Jr.: *See*—
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,642,373, Cl. 560-139.000.
Memorex Corporation: *See*—
El-Sadi, Ashraf I., 4,642,541, Cl. 318-616.000.
Menchetti, Robert J., to Donn Incorporated. Utility module for walls and the like. 4,642,418, Cl. 174-48.000.
Mennemann, Karl; and Grabowski geb. Marszalek, Danuta, to Schott Glaswerke. Optical glass with refractive indexes of 1.60–1.69 and Abbe numbers of at least 54 with particularly low density and particularly good chemical stability. 4,642,297, Cl. 501-78.000.
Menor, George, to Siemens Medical Laboratories, Inc. Filter adjustment system for use in electronic accelerators and the like. 4,642,572, Cl. 328-228.000.
Mercer, Garry C.: *See*—
Giles, Dale J.; and Mercer, Garry C., 4,641,699, Cl. 157-1.170.
Merck & Co., Inc.: *See*—
Baldwin, John J.; and Ponticello, Gerald S., 4,642,311, Cl. 514-316.000.
Mercury Machine Company: *See*—
Petrenchik, John R., 4,641,702, Cl. 164-137.000.
Merki, Hubert, to Zumbach Electronic AG. Method and apparatus for checking the wall thickness of a layer. 4,641,525, Cl. 73-432.100.
Merrill, George O., to Cooper Industries, Inc. Lifting clamp cam wear indicator and method. 4,641,877, Cl. 294-101.000.
Mesa, Jesus G., to Progesco, S.A. Parking space blocking device. 4,641,459, Cl. 49-35.000.
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Haas, Jan T.; and Hadwin, Robin-Leslie, 4,641,678, Cl. 137-15.100.
Herbig, Henning; Heinze, Horst; Drachenberg, Franz; and Pontoppidan, Knud, 4,642,652, Cl. 343-915.000.
Mitsching, Rainer; and Nennstiel, Heinz, 4,641,510, Cl. 72-53.000.
Mestdagh, Gilbert E.; and Aldenhoven, Ghislanus M. A. M., to U.S. Philips Corporation. Latching storage case for a holder containing an information carrier. 4,641,747, Cl. 206-309.000.
Mester, Zoltan C.; and Aitken, Edward J., to Union Oil Company of California. Process for reducing sulfur oxide emissions from catalytic cracking units. 4,642,177, Cl. 208-113.000.
Metalquimia, S.A.: *See*—
Corominas, Narciso L., 4,641,691, Cl. 141-73.000.
Metcalf, Jeffrey D.: *See*—
Gillingham, Gary D.; and Metcalf, Jeffrey D., 4,641,737, Cl. 192-141.000.
Mettler, Karl, to Etablissement Supervis. Crankshaft assembly for small gasoline motors. 4,641,546, Cl. 74-598.000.
Metz, Bruce E., to Athena Controls Inc. Heat station for a heat sealing system. 4,641,482, Cl. 53-388.000.
Metzger, James J., Jr.: *See*—
Steiner, Robert E.; Cox, Karmen D.; Terpstra, Daniel A.; Metzger, James J., Jr.; and Plume, Steven H., 4,641,557, Cl. 83-71.000.
Meulen, Antonius M., to Stork Screens B.V. Method and apparatus for the manufacture of a screen roller. 4,641,411, Cl. 29-424.000.
Meyer, Adolf J.: *See*—
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Meyers, George N., Jr. Motor vehicle headlight indicator. 4,642,737, Cl. 362-61.000.
Meyman, Usher. Automatic transmission utilizing gyroscopic satellite gears. 4,641,550, Cl. 74-751.000.
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Marshall, Michael S.; and Ingham, Vernon R., 4,642,007, Cl. 410-78.000.
Michalke, Klaus A., to Chrysler Motors Corporation. Windshield wiper extension mechanism. 4,641,390, Cl. 15-250.230.
Michel, Helmut; Marzeneil, Klaus; Kampe, Wolfgang; Bartsch, Wolfgang; and Schaumann, Wolfgang, to Boehringer Mannheim GmbH. Indolin-2-one derivatives preparation thereof and intermediates for the preparation thereof. 4,642,309, Cl. 514-269.000.
Micromanipulator Microscope Co., Inc.: *See*—
Podvin, T. Charles; and Porter, Gene A., 4,641,930, Cl. 350-529.000.
Microtel Limited: *See*—
Fast, Raymond D.; and Murray, Brian A., 4,642,576, Cl. 331-1.00R.
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Guthling, Klaus; Meyer, Adolf J.; and Miethe, Manfred, 4,641,576, Cl. 101-415.100.
Mikami, Takeshi: *See*—
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Mildrum, Claude M.: *See*—
Orr, William L.; Doshi, Pratap K.; Mildrum, Claude M.; and Freeman, Thomas R., 4,642,216, Cl. 376-327.000.
Miller, Ira, to Motorola, Inc. Current to voltage converter circuit. 4,642,551, Cl. 323-314.000.
Miller, Jon E.: *See*—
Carpenter, Keith H.; Miller, Jon E.; and Murphy, John W., 4,642,502, Cl. 310-156.000.
Miller, Luitpold; and Raschbichler, Hans-Georg, to Thyssen Industrie AG. Magnetic suspension railway. 4,641,586, Cl. 104-284.000.
Miller, Matthew S.: *See*—
Fitzmayer, Louis H.; Staats, James E.; and Miller, Matthew S., 4,642,435, Cl. 219-10.55F.
Miller, Richard T.; Sukhman, Yefim P.; and Welker, Lynn C., to Dow Corning Corporation. Method and apparatus for edge contouring lenses. 4,642,439, Cl. 219-121.0LN.
Milligan, James H., to Megabit Communications, Inc. Enhanced distance data transmission system. 4,642,629, Cl. 340-825.000.
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Hughes, David C., 4,641,831, Cl. 272-31.00R.
Milton Bradley International, Inc.: *See*—
Murtha, Eugene A.; Johnson-Williams, Mark B.; Madison, Theodore N.; and Cartabiano, Michael C., 4,642,710, Cl. 360-79.000.
Miltope Corporation: *See*—
Ende, Don S., 4,642,715, Cl. 360-97.000.
Minami, Kazuo; and Awano, Mitsuru, to Tokyo Institute of Technology. Microwave pulse source. 4,642,571, Cl. 328-59.000.
Minisci, Francesco: *See*—
Giordano, Claudio; Uggeri, Fulvio; and Minisci, Francesco, 4,642,376, Cl. 562-466.000.
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Noguchi, Akinori, 4,642,241, Cl. 426-634.000.
Minnesota Mining and Manufacturing Company: *See*—
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Gebeke, Charles D.; and Weavers, Mark W., 4,642,722, Cl. 360-132.000.
Minolta Camera Kabushiki Kaisha: *See*—
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Takeda, Katsuhiko; and Sugiura, Masamichi, 4,641,957, Cl. 355-58.000.
Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, 4,642,278, Cl. 430-66.000.
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Minoura, Kazuo: *See*—
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Minshull, John F.; and Pinnell, Martin C., to International Business Machines Corporation. Presentation space management and viewporting on a multifunction virtual terminal. 4,642,790, Cl. 364-900.000.
Miro Roig, Pedro: *See*—
Elia De Miguel, Maria-Fe; Miro Roig, Pedro; and Pares Olivet, Eulalia, 4,642,288, Cl. 435-99.000.
Miron, William L., to Computerized Security Systems, Inc. Recentering for shafts of locks and other mechanisms. 4,641,868, Cl. 292-336.300.
Misawa, Rokuro: *See*—
Ishiwatari, Takeo; Sasaki, Yasuchiyo; Misawa, Rokuro; and Takao, Shingo, 4,641,690, Cl. 141-4.000.
Misco, Peter F., Jr.: *See*—
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Mita Industrial Co., Ltd.: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.
Mitani, Kiyoharu; Morohashi, Kazuo; Yamada, Kenji; Gonda, Tsunemi; and Mizutani, Hideo, to Nippon Kogaku K. K. Apparatus for measuring optical characteristics of optical systems. 4,641,964, Cl. 356-124.000.
Mitchell, Emile. Magnetic driven motor. 4,642,534, Cl. 318-138.000.

Mithui, Syuzi: *See*—
Okimoto, Haruo; Mithui, Syuzi; and Ebino, Hiroshi, 4,641,619, Cl. 123-479.000.
Mitsching, Rainer; and Nennstiel, Heinz, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Electromagnetically operated peening tool. 4,641,510, Cl. 72-53.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Furumura, Takashi; and Ohba, Takeo, 4,642,544, Cl. 318-696.000.
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.
Sako, Yuji, 4,642,597, Cl. 337-82.000.
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Ueda, Akinori; and Okamoto, Kouichi, 4,642,503, Cl. 310-214.000.
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Yoshiyasu, Hajimu; Takahashi, Mitsugu; Hisatsune, Fumiyuki; and Murata, Shiro, 4,642,428, Cl. 200-144.00R.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Nohara, Hiroshi, 4,642,059, Cl. 440-75.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Yoshimura, Hironori, 4,642,003, Cl. 408-144.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Torii, Takahiro; Ishiguro, Mamoru; and Senoh, Hideaki, 4,642,662, Cl. 346-215.000.
Mitsubishi Pencil Co., Ltd.: *See*—
Ohmori, Hirofumi, 4,642,102, Cl. 604-210.000.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Nojiri, Naohiro; and Sakai, Yukio, 4,642,360, Cl. 549-534.000.
Mitsubishi Rayon Company, Ltd.: *See*—
Masuzawa, Tokihiko; Kageyama, Yoshitaka; and Tomita, Norizou, 4,642,736, Cl. 362-31.000.
Mitsuboshi Belting Ltd.: *See*—
Mashimo, Satoshi; Kakiuchi, Hajime; and Nakajima, Masayoshi, 4,642,082, Cl. 474-260.000.
Takano, Hiroshi; Takagi, Shinichi; and Wada, Kiyokazu, 4,642,080, Cl. 474-244.000.
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Miyaki, Masahiko; and Egami, Tsuneyuki, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Method and apparatus for controlling an engine. 4,642,773, Cl. 364-431.050.
Miyamoto, Junichi; and Iizuka, Tetsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Floating gate type EEPROM with a substrate region used for the control gate. 4,642,673, Cl. 357-23.500.
Miyamoto, Ritsu, to Victor Company of Japan, Ltd. Tape cassette loading and ejecting device in a magnetic recording and/or reproducing apparatus. 4,642,714, Cl. 360-96.500.
Miyashiro, Shigeyoshi; Kida, Takao; Shiio, Tsuyoshi; and Shibai, Hiroshiro, to Ajinomoto Co., Inc. Anthracycline compounds bound to hydrophilic polypeptides. 4,642,335, Cl. 530-409.000.
Miyashita, Norio; and Nemoto, Akira, to Honda Giken Kogyo Kabushiki Kaisha; and Tachikawa Spring Co. Ltd. Seat for vehicles. 4,641,884, Cl. 297-284.000.
Miyata, Kenji: *See*—
Izumi, Shigeru; Senoh, Makoto; Tsumaki, Koji; and Miyata, Kenji, 4,641,526, Cl. 73-572.000.
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, to Canon Kabushiki Kaisha. Apparatus for forming an image on one side of a record medium and in another mode to form images on both sides thereof. 4,641,954, Cl. 355-14.00R.
Miyata, Shigeo; Iizima, Noriko; and Manabe, Tadashi, to Kyowa Chemical Industry Co. Ltd. Method for purification of the cooling water used in nuclear reactors. 4,642,193, Cl. 210-682.000.
Miyata, Teruo: *See*—
Kuroyanagi, Yoshimitsu; Miyata, Teruo; and Seno, Manabu, 4,642,118, Cl. 623-15.000.
Miyazaki, Koichiro: *See*—
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Miyazaki, Yoshihiko; Goto, Taizan; Komiyama, Yoshizo; and Iwata, Kotei, to Toshiba Kikai Kabushiki Kaisha. Epitaxial growing apparatus. 4,641,603, Cl. 118-724.000.
Miyoshi, Tadayoshi: *See*—
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Adams, Priscilla L.; and Farcasiu, Malvina, 4,642,176, Cl. 208-111.000.
Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Valyocsik, Ernest W., 4,642,226, Cl. 423-328.000.
Dessau, Ralph M.; and Kerr, George T., 4,642,407, Cl. 585-640.000.
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Shihabi, David S., 4,642,404, Cl. 585-415.000.
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Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, to Dynamit Nobel Aktiengesellschaft. Process for the production of dimethyl terephthalate from p-xylene and methanol. 4,642,369, Cl. 560-77.000.
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, to Dynamit Nobel Aktiengesellschaft. Process for producing terephthalic acid from p-xylene and methanol by way of dimethyl terephthalate. 4,642,377, Cl. 562-483.000.
Moffatt, Michael; LePage, James; and Englar, Gerald, to EML Environmental Simulations Inc. Portable panoramic theatre. 4,641,918, Cl. 350-125.000.
Mohri, Katsuo: *See*—
Furuhata, Takashi; Mohri, Katsuo; and Konishi, Katsuo, 4,642,708, Cl. 360-77.000.
Mok, Walter Y. W., to MCM Laboratories, Inc. Probe-and-fire lasers. 4,641,650, Cl. 128-303.100.
Moldowan, Mervin J. Composition and method for ethanol determination. 4,642,286, Cl. 435-25.000.
Molecular Genetics Research and Development Limited Partnership: *See*—
Hibberd, Kenneth A.; Anderson, Paul C.; and Barker, Melanie, 4,642,411, Cl. 800-1.000.
Moll, Eberhard; Lardon, Marcel; and Muller, Edgar, to Balzers Aktiengesellschaft. Tube having strain-hardened inside coating. 4,641,450, Cl. 42-76.020.
Mondini, Giancarlo; Hefti, Walter; and Kaufmann, Siegfried, to Maschinenfabrik Rieter AG. Drafting mechanism for spinning machines. 4,641,397, Cl. 19-258.000.
Monolithic Memories, Inc.: *See*—
Hoberman, Barry A., 4,642,797, Cl. 365-221.000.
Monsanto Company: *See*—
Walker, George E., 4,642,254, Cl. 428-36.000.
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Moore, John S.: *See*—
Powers, Maston L.; Dodson, Christopher J.; Moore, John S.; and Ghassemi, Farhad, 4,641,709, Cl. 166-252.000.
Moore, Kevin W.; and Zaffaroni, Alejandro, to DNAX Research Institute of Molecular and Cellular Biology, Inc. Hybrid DNA prepared binding composition. 4,642,334, Cl. 530-388.000.
Moore, Stanley E.: *See*—
Hunter, Douglas L.; and Moore, Stanley E., 4,642,395, Cl. 568-883.000.
Morales, Alfredo L.; Galiasso, Roberto; Carrasquel, Angel R.; and Salazar, Jose A., to Intevep, S.A. Catalyst for removing sulfur and metal contaminants from heavy crudes and residues. 4,642,179, Cl. 208-217.000.
Moreland, Jack, to MPC Containment Systems, Ltd. Airtight, watertight mechanical seam for joining panels of industrial strength fabrics. 4,641,400, Cl. 24-389.000.
Moren, Nils F. E.: *See*—
Andersson, Jan A. R.; Moren, Nils F. E.; Wetterlin, Kjell I. L.; Snellman Wasenius, Kaija A.; and Virtanen, Risto, 4,641,644, Cl. 128-200.230.
Morganson, Stephen A.: *See*—
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Mori, Takanobu; Fukui, Yutaka; Kashimura, Tetsuo; and Yanai, Yoshimi, to Hitachi, Ltd. Electric rotary machine having superconducting rotor. 4,642,495, Cl. 310-52.000.
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Switch. 4,642,429, Cl. 200-144.00R.
Morille, Robert; and Saroul, Jacques, to Crouzet. Device for controlling continuity of printed circuits. 4,642,560, Cl. 324-73.0PC.
Morino, Ronald; and Conti, Joseph A., to Kollmorgen Technologies Corp. Ultrasonic stylus position stabilizer. 4,641,773, Cl. 228-1.100.
Morino, Seiji; Uno, Eiichi; and Yoshitani, Yoshihiro, to Nippondenso Co., Ltd. Electronic ignition device for interval combustion engines. 4,641,626, Cl. 123-620.000.
Morita, Atsuo: *See*—
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Morita, Haruyuki; Yoshinari, Jiro; and Fukuda, Kazumasa, to TDK Corporation. Magnetic recording medium. 4,642,270, Cl. 428-621.000.
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Yahagi, Masakichi; Igaki, Tetsuo; Yosinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, 4,642,357, Cl. 549-226.000.
Morita, Shigetoshi; Ashizawa, Masaaki; and Yamada, Hirohide, to Hitachi Metals, Ltd. Magnetic head assembly. 4,642,719, Cl. 360-126.000.
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Morris, George E.: *See*—
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Morrisroe, John J., Jr. System and method for leveling a converted motor home. 4,641,843, Cl. 280-6.00R.
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Marie, Jean-Pierre E., 4,641,739, Cl. 194-253.000.
Mort, Edgar A., to Inter-Lock Steel Company, Inc. Combination connector plate and tail truss. 4,641,480, Cl. 52-693.000.
Morterol, Frederic; and Vidal, Jean L., to BP Chimie Societe Anonyme. Copolymerization of ethylene and an alpha-olefin having 6 carbon atoms in a fluidized bed. 4,642,328, Cl. 526-125.000.
Morton, Thomas M. Portable HF antenna. 4,642,650, Cl. 343-745.000.
Moscardini, Robert L., to Combustion Engineering, Inc. Compactor enhancement system. 4,641,789, Cl. 241-31.000.
Moss, Gerald. Gastrointestinal aspirating device with suction breakers. 4,642,092, Cl. 604-43.000.
Motola, Patrick D.: *See*—
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Motorola Computer Systems, Inc.: *See*—
Lavelle, Michael G., 4,642,789, Cl. 364-900.000.
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Motorola, Inc.: *See*—
Arvanitis, Aristotelis S., 4,642,505, Cl. 310-312.000.
Chason, Marc K.; Tomase, Joseph P.; and Onystok, Michael J., 4,642,511, Cl. 310-348.000.
Comroe, Richard A.; and Petrie, Adelore F., 4,642,807, Cl. 371-31.000.
Dunkerton, Stephen H.; Reynolds, Gary R.; Chapman, Scott G.; and Erickson, Gary D., 4,642,633, Cl. 340-825.760.
Gasparaitis, Bernard V.; and Richardson, C. Patrick, 4,641,925, Cl. 350-345.000.
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Lombardi, Steven A.; and Potter, David O., 4,642,479, Cl. 307-141.000.
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Miller, Ira, 4,642,551, Cl. 323-314.000.
Uurtamo, Stephen J., 4,642,642, Cl. 343-165.000.
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Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, to Canon Kabushiki Kaisha. Recording medium. 4,642,247, Cl. 427-214.000.
Mowill, R. Jan, to A/S Kongsberg Vapenfabrikk. Dual entry radial turbine gas generator. 4,641,495, Cl. 60-39.161.
Mowry, Harry E.; and Hawkes, Richard B., to Harris Graphics Corporation. Collator with moveable stitcher over saddle conveyor system. 4,641,825, Cl. 270-53.000.
MPC Containment Systems, Ltd.: *See*—
Moreland, Jack, 4,641,400, Cl. 24-389.000.
MTU Motoren-und Turbinen-Union Muenchen GmbH: *See*—
Popp, Joachim, 4,642,027, Cl. 415-177.000.
Mueller, Fritz; and Pienta, Lothar, to Gebrueder Mueller Apparatebau GmbH & Co. KG. Pressure measuring apparatus. 4,641,533, Cl. 73-706.000.
Mueller, Sieghard: *See*—
Braun, Hermann; Dumschat, Helmut; Strommer, Kurt; and Mueller, Sieghard, 4,641,515, Cl. 72-405.000.
Mullane, William E.; and Lund, David, to Taylor-Winfield Corporation, The. Battery intercell connection by induction heating. 4,642,442, Cl. 219-10.410.
Mullani, Nizar A., to Clayton Foundation for Research. Positron emission tomography camera. 4,642,464, Cl. 250-363.00S.
Muller, Alexander: *See*—
Boyd, John H., Jr.; and Muller, Alexander, 4,642,536, Cl. 318-254.000.
Muller, Anneliese, Silvia Muller, Werner J. Muller, heirs: *See*—
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Muller, Edgar: *See*—
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Muller, Erich; Gunter, Ruhle; and Stocker, Wilhelm, to Getrag Getriebe-und Zahnradfabrik GmbH. Synchronizing mechanism for clutches. 4,641,734, Cl. 192-53.00F.
Muller, Fernand; Wannborg, Nils A.; and Billen, Kurt, to Electrolux S.a.r.l. Apparatus for cooking and/or for heating of air. 4,641,629, Cl. 126-6.000.
Muller, Helmut, to J. M. Voith GmbH. Multiple stage gearbox shiftable under load. 4,641,549, Cl. 74-732.000.
Muller, Horst, deceased: *See*—
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Muller, Jurgen; Kastl, Alfons; and Farber, Heinrich, to Agfa-Gevaert AG. Sheet film processing apparatus for exposed sheet film. 4,641,940, Cl. 354-322.000.
Munchbach, George E.: *See*—
Walton, Richard R.; and Munchbach, George E., 4,641,827, Cl. 271-18.300.
Mundus, Friedhelm; and Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for stacking flat articles. 4,642,013, Cl. 414-73.000.
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Murakami, Jyoji; and Yamada, Kenzi, to Fujitsu Limited. Integration type analog-to-digital converter having continuously charging and discharging functions. 4,642,609, Cl. 340-347.0AD.
Murakami, Kanji: *See*—
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.
Murakami, Takashi: *See*—
Ohta, Takahiro; Inuiya, Masafumi; Kobayashi, Kazuyoshi; and Murakami, Takashi, 4,642,700, Cl. 358-285.000.
Murakami, Terukiyo, to Nissan Motor Company, Limited. Apparatus for throttle valve control. 4,641,622, Cl. 123-479.000.
Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, to Hitachi, Ltd. Photo-electronic conversion apparatus with light pattern discriminator. 4,642,412, Cl. 136-244.000.
Muranaka, Takeshi: *See*—
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 4,642,269, Cl. 428-516.000.
Murata, Katsuaki: *See*—
Harada, Kosuke; Murata, Katsuaki; and Nakamizo, Takazi, 4,642,549, Cl. 323-210.000.
Murata Kikai Kabushiki Kaisha: *See*—
Fukunaga, Mitsuo, 4,641,493, Cl. 57-296.000.
Murata Manufacturing Co., Ltd.: *See*—
Kobayashi, Yoshio, 4,642,591, Cl. 333-227.000.
Murata, Mitsuhiro, to Citizen Watch Co., Ltd. Color liquid crystal display apparatus with improved display color mixing. 4,642,628, Cl. 340-784.000.
Murata, Shiro: *See*—
Yoshiyasu, Hajimu; Takahashi, Mitsugu; Hisatsune, Fumiyuki; and Murata, Shiro, 4,642,428, Cl. 200-144.00R.
Murata, Taneo, to Alps Electric Co., Ltd. Pushbutton switch with aural confirmation of operation. 4,642,433, Cl. 200-308.000.
Murayama, Seiichi: *See*—
Matsuno, Hiromitsu; Murayama, Seiichi; and Ono, Tetsuo, 4,642,512, Cl. 313-25.000.
Murner, Ulf, to Voith Turbo GmbH & Co. KG. Valve arrangement for controlling the flow of mediums. 4,641,683, Cl. 137-487.500.
Murphy, John W.: *See*—
Carpenter, Keith H.; Miller, Jon E.; and Murphy, John W., 4,642,502, Cl. 310-156.000.
Murphy, Richard W. Extruder screw for minimizing the opposing pressure flow. 4,642,041, Cl. 425-208.000.
Murray, Brian A.: *See*—
Fast, Raymond D.; and Murray, Brian A., 4,642,576, Cl. 331-1.00R.
Murtha, Eugene A.; Johnson-Williams, Mark B.; Madison, Theodore N.; and Cartabiano, Michael C., to Milton Bradley International, Inc. Animated display controlled by an audio device. 4,642,710, Cl. 360-79.000.
Musselmann, Walter; and Konecsny, Helmut, to J. M. Voith GmbH. System for wastepaper processing using a wash filter. 4,641,790, Cl. 241-46.170.
Musser, Glenn A.: *See*—
Wynn, Edward J.; Musser, Glenn A.; and Halls, Lawrence M., 4,641,490, Cl. 56-10.200.
Musser, John H.: *See*—
Kreft, Anthony F., III; Pattison, Thomas W.; and Musser, John H., 4,642,347, Cl. 546-181.000.
N.J. Phillips Pty. Limited: *See*—
Phillips, Ian R.; Lodge, Robert H.; and Bunyan, Glen W., 4,642,099, Cl. 604-136.000.
N P S P "Desintegrator": *See*—
Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., 4,641,791, Cl. 241-66.000.
Nagae, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, to Hitachi, Ltd. Liquid crystal device. 4,641,924, Cl. 350-339.00R.
Nagai, Michiko: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.
Nagano, Fumikazu, to Sharp Kabushiki Kaisha. Color image reading apparatus. 4,642,679, Cl. 358-75.000.
Nagano, Jun; and Tanaka, Shuichi, to Bridgestone Corporation. System for measuring amount of rubber bank between rolls. 4,642,686, Cl. 358-107.000.
Nagano, Masashi, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,642,072, Cl. 474-82.000.
Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, to Kabushiki Kaisha Toshiba. Image building apparatus. 4,642,659, Cl. 346-76.0PH.
Nagashima, Satoshi, to Sakae Ringyo Co., Ltd. Multiple sprocket wheel. 4,642,075, Cl. 474-160.000.
Nagashima, Yoichi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,641,563, Cl. 84-1.010.
Nagayasu, Isao: *See*—
Wakita, Kazuto; Tsuchiya, Kazuo; Nagayasu, Isao; and Emoto, Ikuo, 4,642,260, Cl. 428-215.000.

Nagel, Dietmar: *See*—
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi, 4,642,066, Cl. 446-420.000.

Naito, Kenzo; Kato, Masayasu; and Tsukamura, Kazuo, to Takeda Chemical Industries, Ltd. Method for production of 1,3,2-dioxaphospholes. 4,642,365, Cl. 558-83.000.

Nakadai, Shigeru; and Tamada, Teruo, to Tokc, Inc. Miniaturized transformer. 4,642,596, Cl. 336-98.000.

Nakagaki, Shintaro: *See*—
Takanashi, Itsuo; Miyoshi, Tadayoshi; Nakagaki, Shintaro; and Nishiyama, Hiroshi, 4,642,677, Cl. 358-43.000.

Nakagawa, Yasuo: *See*—
Hiroi, Takashi; Ninomiya, Takanori; and Nakagawa, Yasuo, 4,641,527, Cl. 73-582.000.

Nakahata, Kimio; Toyono, Tsutomu; Takagi, Atsushi; and Aguro, Yoshinori, to Canon Kabushiki Kaisha. Method of and device for preventing disturbance of unfixed visible image. 4,641,948, Cl. 355-3.0SH.

Nakajima Dokosho Company Limited: *See*—
Nakajima, Masahiko, 4,641,632, Cl. 126-413.000.

Nakajima, Masahiko, to Nakajima Dokosho Company Limited. Heating iron using liquefied gas. 4,641,632, Cl. 126-413.000.

Nakajima, Masayoshi: *See*—
Mashimo, Satoshi; Kakiuchi, Hajime; and Nakajima, Masayoshi, 4,642,082, Cl. 474-260.000.

Nakamizo, Takazi: *See*—
Harada, Kosuke; Murata, Katsuaki; and Nakamizo, Takazi, 4,642,549, Cl. 323-210.000.

Nakamura, Mitsutoshi: *See*—
Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, 4,642,278, Cl. 430-66.000.
Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, 4,642,279, Cl. 430-66.000.

Nakamura, Nobuo: *See*—
Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, 4,642,412, Cl. 136-244.000.

Nakamura, Shinichi: *See*—
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.

Nakamura, Shizuo; Inoue, Makoto; and Tsuda, Yoshiaki, to Otsuka Pharmaceutical Factory, Inc. Proline derivatives. 4,642,355, Cl. 548-533.000.

Nakamura, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Clarifying apparatus. 4,642,186, Cl. 210-257.100.

Nakanishi, Shigeo; Calco, Frank S.; and Scarpelli, August R., to United States of America, National Aeronautics and Space Administration. Precision tunable resonant microwave cavity. 4,642,523, Cl. 315-111.810.

Nakanishi, Toru: *See*—
Yoshimura, Takeshi; Sameshima, Mutsuro; Nakanishi, Toru; and Kato, Shigeo, 4,641,620, Cl. 123-432.000.

Nakano, Hidetaka: *See*—
Kosugi, Motoki; and Nakano, Hidetaka, 4,641,904, Cl. 339-99.00R.

Nakatsugawa, Kenji; Katayama, Aiichi; Sekiya, Hitoshi; and Hiratsuka, Shoji, to Anritsu Corporation. Digital wave observation apparatus. 4,642,519, Cl. 315-1.000.

Nalco Chemical Company: *See*—
Johnson, Donald A., 4,642,194, Cl. 210-699.000.

Nambu, Hiroaki: *See*—
Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiko, 4,642,486, Cl. 307-463.000.

Namekawa, Koroku, to Aloka Co., Ltd. Ultrasonic blood flow imaging method and apparatus. 4,641,668, Cl. 128-663.000.

Narui, Satoshi: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, 4,642,730, Cl. 361-315.000.

Narutomi, Yasuhisa: *See*—
Takahashi, Hiroshi; Narutomi, Yasuhisa; Aotani, Yoshimasa; and Shiba, Keisuke, 4,642,283, Cl. 430-303.000.

Nash, Donald R., to Allied Corporation. Ignition module. 4,641,627, Cl. 123-651.000.

National Distillers and Chemical Corporation: *See*—
Hanes, Ronnie M., 4,642,392, Cl. 568-690.000.

National Mine Service Company: *See*—
LeBegue, Maurice K.; and Wilson, Henry E., 4,641,888, Cl. 299-64.000.

National Research Institute for Metals: *See*—
Uda, Masahiro; Ohno, Satoru; and Okuyama, Hideo, 4,642,207, Cl. 264-10.000.

National Semiconductor Corporation: *See*—
Hobrecht, Stephen W., 4,642,579, Cl. 331-111.000.
Skovmand, Timothy J.; and Mottola, Michael J., 4,642,484, Cl. 307-362.000.
Strom, Stephen A.; Schnuelle, Kenneth W.; and Potwora, William E., 4,642,607, Cl. 340-310.00A.
Wilcox, Milton E., 4,642,489, Cl. 307-514.000.

National Starch and Chemical Corporation: *See*—
Neigel, Dennis, 4,642,389, Cl. 568-604.000.
Neigel, Dennis, 4,642,390, Cl. 568-604.000.

Nattel, William, to Commander Electrical Materials, Inc. Formed metallic wiring box. 4,642,420, Cl. 174-53.000.

Nauchno-Issledovatelsky Institut Khimikatov Dlya Polimernykh Materialov: *See*—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

NCR Corporation: *See*—
Gerri, Edward J.; and Eisenhauer, David P., 4,642,634, Cl. 340-870.020.
Packard, Roger E.; and Thomas, Jacob E., 4,642,785, Cl. 364-557.000.

Neal, William D.: *See*—
Stich, Roger L.; and Neal, William D., 4,641,547, Cl. 74-606.00R.

NEC Corporation: *See*—
Hirosaki, Botaro; and Kuriyama, Takashi, 4,642,575, Cl. 331-1.00A.
Kitakata, Makoto, 4,642,672, Cl. 357-40.000.
Ohyagi, Takashi; and Ichikawa, Yoshio, 4,642,632, Cl. 340-825.440.

Needham, Robert F., to ACF Industries, Incorporated. Coaxial operating rod and packing seal for top-operated, bottom outlet valve in railway tank car and method of aligning same. 4,641,677, Cl. 137-15.000.

Neely, Judith L., to Polaroid Corporation. Photographic camera with electronic flash having periodically disabled charging apparatus. 4,641,943, Cl. 354-413.000.

Neigel, Dennis, to National Starch and Chemical Corporation. Process for the manufacture of chloroacetaldehyde dialkyl acetals. 4,642,389, Cl. 568-604.000.

Neigel, Dennis, to National Starch and Chemical Corporation. Process for the manufacture of acetals of chloroacetaldehyde. 4,642,390, Cl. 568-604.000.

Nelson, David A., to Rockwell International Corporation. Multichannel DME ranging system. 4,642,639, Cl. 342-47.000.

Nelson, E. Delbert, Jr. Construction bolt holder. 4,641,478, Cl. 52-704.000.

Nemoto, Akira: *See*—
Miyashita, Norio; and Nemoto, Akira, 4,641,884, Cl. 297-284.000.

Nemoto, Kayoko; and Ohya, Takeshi, to Yokogawa Medical Systems, Limited. Image display system for computerized tomographs. 4,642,621, Cl. 340-721.000.

Nennstiel, Heinz: *See*—
Mitsching, Rainer; and Nennstiel, Heinz, 4,641,510, Cl. 72-53.000.

Nestler, Volker; and Olsowski, Wolfgang, to H. Maihak AG. Method and apparatus for measurement of the concentration of a component of a mixture. 4,641,973, Cl. 356-418.000.

Nestor, Charles R.: *See*—
Pavlak, John J.; and Nestor, Charles R., 4,641,911, Cl. 339-276.00T.

Netsch, Robert L.: *See*—
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,641,860, Cl. 285-38.000.

Neuner, James A.: *See*—
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Therisult, David G., 4,642,636, Cl. 340-870.040.

Nevo, Zvi; and Itay, Samuel, to Ramot University Authority for Applied Research and Industrial Development Ltd. Repair of cartilage and bones. 4,642,120, Cl. 623-16.000.

New England Thermoplastics, Inc.: *See*—
Tayebi, Amad, 4,641,645, Cl. 128-206.190.

New Holland Inc.: *See*—
Wynn, Edward J.; Musser, Glenn A.; and Halls, Lawrence M., 4,641,490, Cl. 56-10.200.

New Product, Inc.: *See*—
Stinson, Donald B.; and Orofino, Arthur A., 4,641,715, Cl. 173-129.000.

New York Institute of Technology: *See*—
Halioua, Maurice; and Srinivasan, Venugopal, 4,641,972, Cl. 356-376.000.

Newton, Anthony D.: *See*—
Jobling, David T.; and Newton, Anthony D., 4,642,531, Cl. 315-371.000.

NGK Insulators, Ltd.: *See*—
Ogawa, Yutaka; Yamada, Shunichi; and Hamanaka, Toshiyuki, 4,642,210, Cl. 264-62.000.

Nguyen, Hoc M.; and Chu, George H., to Collagen Corporation. Mechanically sheared collagen implant material and method. 4,642,117, Cl. 623-11.000.

Nguyen, Huong T.: *See*—
Chan, Tai W.; and Nguyen, Huong T., 4,642,346, Cl. 544-276.000.

Nguyen, Tuan A.: *See*—
Smith, Eugene F.; and Nguyen, Tuan A., 4,641,761, Cl. 220-66.000.

Nichirei Corporation: *See*—
Hosokawa, Hidehiro; Iida, Yoshimichi; and Takahashi, Hisatsugu, 4,641,500, Cl. 62-70.000.

Niekrasz, Francis M.; Kasper, Melvin C.; and Bockwinkel, Gerald J., to Ardco, Inc. Sliding door assembly. 4,641,461, Cl. 49-404.000.

Nigorikawa, Kazunori: *See*—
Sugimori, Shigeru; and Nigorikawa, Kazunori, 4,642,199, Cl. 252-299.610.

Nill, Walter. Screening system including a screen cleaning means for and a method of cleaning a screen in a waste water purification plant. 4,642,195, Cl. 210-798.000.

Ninomiya, Takanori: *See*—
Hiroi, Takashi; Ninomiya, Takanori; and Nakagawa, Yasuo, 4,641,527, Cl. 73-582.000.

Nippon Ball Valve Co., Ltd.: *See*—
Ikematsu, Morio; and Hiranuma, Hiromichi, 4,641,681, Cl. 137-315.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Okamoto, Shimaji, 4,641,564, Cl. 84-1.220.

Tachida, Hiroki; Sato, Takane; and Sato, Shigeaki, 4,641,565, Cl. 84-431.000.
Nippon Kogaku K. K.: *See*—
Mitani, Kiyoharu; Morohashi, Kazuo; Yamada, Kenji; Gonda, Tsunemi; and Mizutani, Hideo, 4,641,964, Cl. 356-124.000.
Yamada, Kenji, 4,641,961, Cl. 356-124.000.
Nippon Kokagu K. K.: *See*—
Hamanishi, Yoshinari, 4,641,928, Cl. 350-427.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Ishiwatari, Takeo; Sasaki, Yasuchiyo; Misawa, Rokuro; and Takao, Shingo, 4,641,690, Cl. 141-4.000.
Nippon Notion Kogyo Co., Ltd.: *See*—
Oura, Hiroshi, 4,641,741, Cl. 198-493.000.
Nippon Oil Company, Ltd.: *See*—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,642,325, Cl. 525-65.000.
Nippon Petrochemicals Company, Ltd.: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, 4,642,730, Cl. 361-315.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Funski, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.
Nippon Shinyaku Co., Ltd.: *See*—
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, 4,642,307, Cl. 514-252.000.
Nippon Soken, Inc.: *See*—
Matsumoto, Muneaki; and Numata, Koji, 4,642,776, Cl. 364-449.000.
Miyaki, Masahiko; and Egami, Tsuneyuki, 4,642,773, Cl. 364-431.050.
Nippon Telegraph & Telephone Public Corporation: *See*—
Ishii, Osamu; Yoshimura, Fumikatsu; and Hatakeyama, Iwao, 4,642,245, Cl. 427-47.000.
Nippon Zeon Co., Ltd.: *See*—
Kobayashi, Toshiaki; Arakawa, Hiromichi; and Ohira, Tatsuo, 4,642,324, Cl. 524-559.000.
Nippondenso Co., Ltd.: *See*—
Miyaki, Masahiko; and Egami, Tsuneyuki, 4,642,773, Cl. 364-431.050.
Morino, Seiji; Uno, Eiichi; and Yoshitani, Yoshihiro, 4,641,626, Cl. 123-620.000.
Shibata, Masahiro, 4,642,174, Cl. 204-408.000.
Nishida, Hiroshi: *See*—
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, 4,642,307, Cl. 514-252.000.
Nishimu Electronics Industries Co., Ltd.: *See*—
Harada, Kosuke; Murata, Katsuaki; and Nakamizo, Takazi, 4,642,549, Cl. 323-210.000.
Nishimura, Minoru: *See*—
Hattori, Torao; Nishimura, Minoru; and Goto, Masaki, 4,642,077, Cl. 474-201.000.
Nishiura, Yozo: *See*—
Nishiwaki, Yoshikazu; and Nishiura, Yozo, 4,641,913, Cl. 350-96.110.
Nishiwaki, Yoshikazu; and Nishiura, Yozo, to Sumitomo Electric Industries, Ltd. Optical integrated circuit utilizing the piezoelectric and photoconductive properties of a substrate. 4,641,913, Cl. 350-96.110.
Nishiyama, Hiroshi: *See*—
Takanashi, Itsuo; Miyoshi, Tadayoshi; Nakagaki, Shintaro; and Nishiyama, Hiroshi, 4,642,677, Cl. 358-43.000.
Nishizawa, Tetsuo: *See*—
Umezu, Takao; Ishiguro, Minoru; and Nishizawa, Tetsuo, 4,641,935, Cl. 354-173.110.
Nissan Motor Company, Limited: *See*—
Murakami, Terukiyo, 4,641,622, Cl. 123-479.000.
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,641,890, Cl. 301-37.0SS.
Nisshin Flour Milling Co., Ltd.: *See*—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.
Nissin-High Voltage Co., Ltd.: *See*—
Yamawaki, Masakatsu; Sakamoto, Isamu; Mizusawa, Kenichi; and Iwamoto, Eiji, 4,642,467, Cl. 250-492.300.
Nitro Nobel AB: *See*—
Lande, Goran; and Persson, Bendt, 4,641,775, Cl. 228-2.500.
Nittan Company, Limited: *See*—
Suzuki, Takashi, 4,642,615, Cl. 340-630.000.
Niwa, Koichi: *See*—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,642,148, Cl. 156-89.000.
Niwa, Takao: *See*—
Osanai, Akinori; and Niwa, Takao, 4,642,068, Cl. 474-11.000.
Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, to Research Association of Synthetic Dyestuffs. Thiazoleazophenylaminoethyl carbonyloxy-C_8–C_{10}-alkyl compounds useful as dyes for polyester fibers. 4,642,339, Cl. 534-650.000.
Nixdorf Computer AG: *See*—
Baitz, Guenter; and Dobring, Wilfried, 4,642,449, Cl. 235-22.000.
NL Industries, Inc.: *See*—
Malguarnera, Salvatore C., 4,641,535, Cl. 73-861.010.
Noda, Tsutomu; Shinkawa, Keiro; and Amada, Nobutaka, to Hitachi, Ltd. Phase locked loop circuit for demodulating suppressed carrier signals. 4,642,573, Cl. 329-50.000.
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, to Daikin Industries Ltd. Automatic dishwasher. 4,641,671, Cl. 134-57.00D.
Noguchi, Akinori, to Director of National Food Research Institute; and Ministry of Agriculture, Foresty and Fisheries. Method for the preparation of textured soybean draff. 4,642,241, Cl. 426-634.000.
Nohara, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Marine contra-rotating propeller apparatus. 4,642,059, Cl. 440-75.000.
Noiles, Douglas G., to Joint Medical Products Corporation. Ball and socket bearing for artificial joint. 4,642,123, Cl. 623-22.000.
Nojiri, Naohiro; and Sakai, Yukio, to Mitsubishi Petrochemical Co., Ltd. Method for producing ethylene oxide. 4,642,360, Cl. 549-534.000.
Nolte, Albert C., Jr.: *See*—
Walker, Harold L., 4,642,070, Cl. 474-57.000.
Nomura, Kazuhiro; and Nomura, Masayuki, to Toyota Jidosha Kabushiki Kaisha. Side door hinge mechanism in motor vehicle. 4,641,881, Cl. 296-202.000.
Nomura, Masayuki: *See*—
Nomura, Kazuhiro; and Nomura, Masayuki, 4,641,881, Cl. 296-202.000.
Nomura, Shunji: *See*—
Fukushima, Noburu; Yoshino, Hisashi; and Nomura, Shunji, 4,642,136, Cl. 75-234.000.
Nordqvist, Glenn O.; and Svenson, Lars-Gote, to Telefonaktiebolaget LM Ericsson. Apparatus for increasing the dynamic range in an integrating optoelectric receiver. 4,642,453, Cl. 250-214.00A.
Norikane, Kiyoshi: *See*—
Kapland, Mitchell A.; Norikane, Kiyoshi; and London, Jack W., 4,641,449, Cl. 42-65.000.
Normag Corporation: *See*—
Fox, Steve A., 4,642,040, Cl. 425-204.000.
North American Philips Consumer Electronics Corp.: *See*—
Say, Donald L., 4,642,515, Cl. 313-414.000.
North, Walter L., Jr.; and England, Barry M. Non-surgical embryo transfer device. 4,642,094, Cl. 604-55.000.
Northern Magnetics, Inc.: *See*—
Hinds, Walter E., 4,642,539, Cl. 318-439.000.
Northern Telecom Limited: *See*—
Fucito, Dermot T.; Paul, James E.; and Markovic, Milan, 4,642,583, Cl. 333-14.000.
Suthers, Mark S.; Este, Grantley O.; Streater, Richard W.; and MacLaurin, Blair K., 4,642,507, Cl. 310-313.00B.
Northland Aluminum Products, Inc.: *See*—
Jorgensen, Jorgen A.; and Nygren, Donald W., 4,642,443, Cl. 219-10.55E.
Northrop Corporation: *See*—
Poland, David A., 4,641,819, Cl. 269-45.000.
Northwestern University: *See*—
Georgopoulos, Panayotis, 4,642,811, Cl. 378-53.000.
Norton Company: *See*—
Zador, Eugene; Kaczmarek, Wesley R.; and Ravipati, Sitaramaiah, 4,642,126, Cl. 51-295.000.
Noth, Myron A., to Square D Company. Mechanically operated pressure switch having solid state components. 4,642,478, Cl. 307-118.000.
Noufi, Rommel; and Chen, Yih-Wen, to United States of America, Energy. Process for producing chalcogenide semiconductors. 4,642,140, Cl. 148-6.240.
Numata, Koji: *See*—
Matsumoto, Muneaki; and Numata, Koji, 4,642,776, Cl. 364-449.000.
Numata, Shunichi: *See*—
Nagae, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, 4,641,924, Cl. 350-339.00R.
Numata, Yoshihiko: *See*—
Kuramoto, Nobuyuki; Takada, Kazuya; and Numata, Yoshihiko, 4,642,298, Cl. 501-96.000.
Nurnberger, George H. Sanitary feces collection device. 4,641,873, Cl. 294-1.400.
N.V. Raychem S.A.: *See*—
Vansant, Jan; and Overbergh, Noel M. M., 4,641,402, Cl. 24-703.000.
Nygren, Donald W.: *See*—
Jorgensen, Jorgen A.; and Nygren, Donald W., 4,642,443, Cl. 219-10.55E.
Nyquist, Gary A., to Deere & Company. Cross loop attenuator for hydraulic systems. 4,642,035, Cl. 417-312.000.
Nyrup, John: *See*—
Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, 4,641,537, Cl. 73-861.120.
Jacobsen, Hans E.; Hansen, Henning M.; Nyrup, John; Hansen, Henry; and Lassithiotakis, Konstantin, 4,641,536, Cl. 73-861.120.
Nyul, Paul; and Hedel, Rudolph H., to RCA Corporation. Electrooptic assembly having an adjustable window. 4,642,513, Cl. 313-110.000.
O.E.M. Technical Sales, Inc.: *See*—
Scoboria, Raymond, 4,641,861, Cl. 285-39.000.
Obara, Naoshi: *See*—
Oushiden, Hideshi; and Obara, Naoshi, 4,641,953, Cl. 355-14.00R.
Object Recognition Systems, Inc.: *See*—
Wilder, Joseph, 4,642,813, Cl. 382-8.000.
O'Brien, Judy K.: *See*—
Friend, Beverly A.; Gierhart, Dennis L.; and O'Brien, Judy K., 4,642,236, Cl. 426-44.000.
O'Brien, Terrence X.; and McKennie, Dale E. Concrete grade crossing system. 4,641,779, Cl. 238-7.000.

Oce-Nederland B. V.: *See*—
Rongen, Josephus W.; and van Cooten, Robertus, 4,641,950, Cl. 355-3.00R.
Ocean Technology, Inc.: *See*—
Carpenter, John C., 4,642,533, Cl. 315-408.000.
O'Connell, Harold, Sr. Smoke filtering material. 4,641,666, Cl. 131-341.000.
Oda, Noriyuki: *See*—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.
Odachi, Kazuyuki: *See*—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.
Odorisio, Paul: *See*—
Spivack, John D.; Pastor, Stephen D.; and Odorisio, Paul, 4,642,382, Cl. 568-12.000.
Oesterle, Hermann: *See*—
Klein, Hans-Christof; Armonier, Ulrich; Oesterle, Hermann; and Jendroska, Juergen, 4,641,519, Cl. 73-129.000.
Oestreich, Ulrich; and Mayr, Ernst, to Siemens Aktiengesellschaft. Optical transmission element. 4,641,916, Cl. 350-96.230.
Office National d'Etudes et de Recherches Aerospatiales: *See*—
Bretaudeau, Francis; and Sarazin, Marc, 4,642,469, Cl. 250-561.000.
Ropars, Marcel; and Bloch, Bertrand, 4,642,264, Cl. 428-367.000.
Ogatsu, Motohiro, to Marutamaya Ogatsu Fireworks Co., Ltd. Circuit apparatus for operating fireworks ignition. 4,641,580, Cl. 102-217.000.
Ogawa, Hiromi: *See*—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,642,148, Cl. 156-89.000.
Ogawa, Noriaki: *See*—
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Uriuhara, Makoto, 4,642,771, Cl. 364-424.100.
Ogawa, Yutaka; Yamada, Shunichi; and Hamanaka, Toshiyuki, to NGK Insulators, Ltd. Rotary cordierite heat regenerator highly gas-tight and method of producing the same. 4,642,210, Cl. 264-62.000.
Ohara, Shuichi: *See*—
Sugawara, Tooru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, 4,642,601, Cl. 338-35.000.
Ohashi, Ryutaro: *See*—
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.
Ohba, Takeo: *See*—
Furumura, Takashi; and Ohba, Takeo, 4,642,544, Cl. 318-696.000.
Ohi, Michio, to Dainippon Screen Mfg. Co., Ltd. Method of scanning and recording images. 4,642,699, Cl. 358-280.000.
Ohio Agricultural Research and Development Center, The: *See*—
Palmquist, Donald L.; and Jenkins, Thomas C., 4,642,317, Cl. 514-558.000.
Ohio State University, The: *See*—
Hoitink, Harry A. J., 4,642,131, Cl. 71-6.000.
Ohira, Tatsuo: *See*—
Kobayashi, Toshiaki; Arakawa, Hiromichi; and Ohira, Tatsuo, 4,642,324, Cl. 524-559.000.
Ohira, Tsunehisa; Hirano, Shinji; and Sadakane, Koji, to Victor Company of Japan, Ltd. Helical scan type recording and/or reproducing apparatus. 4,642,713, Cl. 360-85.000.
Ohkubo, Tsuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Rear door structure for motor vehicles. 4,641,880, Cl. 296-154.000.
Ohkuma, Osamu: *See*—
Matsumoto, Norio; Okuda, Shinya; Ohkuma, Osamu; and Seino, Mituyoshi, 4,641,980, Cl. 400-120.000.
Ohkura, Kosuke: *See*—
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuc; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.
Ohman, Lena: *See*—
Johansson, Elof; and Ohman, Lena, 4,642,305, Cl. 514-182.000.
Ohmori, Hirofumi, to Mitsubishi Pencil Co., Ltd. Injector. 4,642,102, Cl. 604-210.000.
Ohno, Satoru: *See*—
Uda, Masahiro; Ohno, Satoru; and Okuyama, Hideo, 4,642,207, Cl. 264-10.000.
Ohno, Shigeru: *See*—
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,642,277, Cl. 430-57.000.
Ohnuki, Yukihiko: *See*—
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,642,277, Cl. 430-57.000.
Ohta, Takahiro; Inuiya, Masafumi; Kobayashi, Kazuyoshi; and Murakami, Takashi, to Fuji Photo Film Co., Ltd. Method of and apparatus for producing video signal associated with photographic image. 4,642,700, Cl. 358-285.000.
Ohtani, Noboru: *See*—
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.
Ohtsu, Keiichiro: *See*—
Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.
Ohtsuka, Kazutoshi: *See*—
Masuda, Tatsuo; Enokimoto, Akito; and Ohtsuka, Kazutoshi, 4,641,854, Cl. 280-701.000.
Ohya, Takeshi: *See*—
Nemoto, Kayoko; and Ohya, Takeshi, 4,642,621, Cl. 340-721.000.
Ohyagi, Takashi; and Ichikawa, Yoshio, to NEC Corporation. Digital paging system having bit rate switching means and digital paging receiver therefor. 4,642,632, Cl. 340-825.440.
Okada, Akira: *See*—
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinor, 4,641,951, Cl. 355-7.000.
Okado, Hiroyuki: *See*—
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.
Okamoto, Kouichi: *See*—
Ueda, Akinori; and Okamoto, Kouichi, 4,642,503, Cl. 310-214.000.
Okamoto, Shimaji, to Nippon Gakki Seizo Kabushiki Kaisha. Musical tone producing device of waveform memory readout type. 4,641,564, Cl. 84-1.220.
Okamoto, Tsutomu: *See*—
Tamada, Hitoshi; Kaneko, Masahiko; Okamoto, Tsutomu; and Yamada, Toshiro, 4,642,795, Cl. 365-10.000.
Okamoto, Yoshiyuki; and Vicari, Richard, to Koppers Company, Inc. Process for preparing 1,4-dihydroxy, 5,8-dihydronaphthalene and related compounds. 4,642,393, Cl. 568-734.000.
Okano, Haruo: *See*—
Sekine, Makoto; Okano, Haruo; and Horiike, Yasuhiro, 4,642,171, Cl. 204-298.000.
Okano, Kiichiro: *See*—
Igarashi, Makoto; Okano, Kiichiro; and Kumagami, Naoki, 4,641,742, Cl. 198-627.000.
Okimoto, Haruo; Mithui, Syuzi; and Ebino, Hiroshi, to Mazda Motor Corporation. Fuel injection control in supercharged engine. 4,641,619, Cl. 123-479.000.
Okubo, Takashi: *See*—
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, 4,642,307, Cl. 514-252.000.
Okuda, Kazuhiro; Tanaka, Makoto; and Kuramitsu, Wataru, to Tokyo Juki Industrial Co., Ltd. Printer paper feeding apparatus. 4,641,830, Cl. 271-274.000.
Okuda, Shinya: *See*—
Matsumoto, Norio; Okuda, Shinya; Ohkuma, Osamu; and Seino, Mituyoshi, 4,641,980, Cl. 400-120.000.
Okuyama, Hideo: *See*—
Uda, Masahiro; Ohno, Satoru; and Okuyama, Hideo, 4,642,207, Cl. 264-10.000.
Old, Lloyd J.: *See*—
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240.000.
Olger, Glenn E. Pin driving tool. 4,641,412, Cl. 29-426.500.
Olin Corporation: *See*—
Ashok, Sankaranarayanan; and Breedis, John F., 4,642,146, Cl. 148-414.000.
Oliver, Jim; and Watson, Pat, to United States of America, Navy. Projectile stowage rack. 4,641,755, Cl. 211-60.100.
Olmstead, A. Dale: *See*—
McCarthy, Timothy D.; Christians, Scott T.; and Olmstead, A. Dale, 4,642,787, Cl. 364-561.000.
Olsowski, Wolfgang: *See*—
Nestler, Volker; and Olsowski, Wolfgang, 4,641,973, Cl. 356-418.000.
Olsson, Billy E., to AMP Incorporated. Shielded electrical connector. 4,641,906, Cl. 339-143.00R.
Olympus Optical Co., Ltd.: *See*—
Yabe, Hisao, 4,641,635, Cl. 128-6.000.
Yunoki, Yutaka; Kimura, Kenji; Kato, Akira; and Imamura, Tatsuo, 4,642,711, Cl. 360-84.000.
O'Meara, Thomas R., to Hughes Aircraft Company. Nonlinear delay line encoding/decoding arrangements. 4,642,582, Cl. 332-7.510.
Omika, Hiroyoshi: *See*—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,642,325, Cl. 525-65.000.
Omori, Takuro: *See*—
Yanagiuchi, Shigenobu; and Omori, Takuro, 4,642,761, Cl. 364-200.000.
O'Neill, Brian C.: *See*—
Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinckney, Warren J.; and Wilson, Alan D., 4,642,438, Cl. 219-121.00L.
Ono, Haruo: *See*—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.
Ono, Tetsuo: *See*—
Matsuno, Hiromitsu; Murayama, Seiichi; and Ono, Tetsuo, 4,642,512, Cl. 313-25.000.
Onystok, Michael J.: *See*—
Chason, Marc K.; Tomase, Joseph P.; and Onystok, Michael J., 4,642,511, Cl. 310-348.000.
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, to Nissan Motor Company, Ltd.; and Hashimoto Forming Kogyo Co., Ltd. Wheel cover for a vehicle. 4,641,890, Cl. 301-37.0SS.

Ootani, Tsuyoshi: *See*—
Kishine, Nobuyuki; Imamura, Tetsuya; Yamauchi, Michihide; and Ootani, Tsuyoshi, 4,642,720, Cl. 360-126.000.
Orofino, Arthur A.: *See*—
Stinson, Donald B.; and Orofino, Arthur A., 4,641,715, Cl. 173-129.000.
Orr, William L.; Doshi, Pratap K.; Mildrum, Claude M.; and Freeman, Thomas R., to Westinghouse Electric Corp. Control rod cluster arrangement. 4,642,216, Cl. 376-327.000.
Orsburn, Michael L.; Hemsky, Robert L.; and Bacon, James I., to VTA Technologies, Inc. Phase responsive composite video signal control system. 4,642,682, Cl. 358-80.000.
Osakabe, Nobuyuki: *See*—
Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.
Osanai, Akinori; and Niwa, Takao, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling continuously variable transmission. 4,642,068, Cl. 474-11.000.
Oshima, Akio: *See*—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,642,325, Cl. 525-65.000.
Oshima, Yujiro: *See*—
Aoyama, Taro; and Oshima, Yujiro, 4,641,617, Cl. 123-262.000.
Osthoff Senge GmbH & Co. KG: *See*—
Osthoff, Walter; Hohenester, Otmar; and Gessner, Anton, 4,641,403, Cl. 26-3.000.
Osthoff, Walter; Hohenester, Otmar; and Gessner, Anton, to Osthoff Senge GmbH & Co. KG. Machine for flame processing of textile fabric webs. 4,641,403, Cl. 26-3.000.
Oswald, Heinz: *See*—
Flueli, Adolf; Oswald, Heinz; and Schefer, Kurt, 4,641,793, Cl. 242-18.0PW.
Otsuka Pharmaceutical Factory, Inc.: *See*—
Nakamura, Shizuo; Inoue, Makoto; and Tsuda, Yoshiaki, 4,642,355, Cl. 548-533.000.
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, to Nippon Oil Company, Ltd. Cathode-depositing electrodeposition coating composition. 4,642,325, Cl. 525-65.000.
Ott, Vernon D. Adjustable vibration dampening motor mount for motorcycles. 4,641,810, Cl. 248-635.000.
Oura, Hiroshi, to Nippon Notion Kogyo Co., Ltd. Parts supplying apparatus for button assembling and setting machines. 4,641,741, Cl. 198-493.000.
Oushiden, Hideshi; and Obara, Naoshi, to Kabushiki Kaisha Toshiba. Image forming apparatus. 4,641,953, Cl. 355-14.00R.
Outboard Marine Corporation: *See*—
Dogadko, Peter; and Enlow, David, 4,641,618, Cl. 123-335.000.
Ferguson, Arthur R., 4,641,615, Cl. 123-196.0AB.
Sullivan, Donald K., 4,642,058, Cl. 440-61.000.
Outokumpu Oy: *See*—
Makinen, Juho K.; Peuralinna, Mauri J.; and Aaltonen, Olavi A., 4,642,133, Cl. 75-2.000.
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., to Nauchno-Issledovatelsky Institut Khimikatov Dlya Polimernykh Materialov. Process for producing phthalimides of alkali metals. 4,642,354, Cl. 548-473.000.
Overbergh, Noel M. M.: *See*—
Vansant, Jan; and Overbergh, Noel M. M., 4,641,402, Cl. 24-703.000.
Overhead Conveyor Company: *See*—
Harrington, Earl J., 4,641,583, Cl. 104-172.100.
Overy, Colin, to Black & Decker Inc. Power device housing with lubricant anti-wicking facility. 4,641,762, Cl. 220-81.00R.
Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Power generating optical filter. 4,642,413, Cl. 136-249.000.
Owens, Joe M. User-mounted concrete screed. 4,641,995, Cl. 404-118.000.
Oxley Developments Company Limited: *See*—
Chambers, Jeffrey, 4,642,589, Cl. 333-182.000.
Oy Partek Ab: *See*—
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.
Oy Wartsila Ab: *See*—
Hanhikoski, Hannu; Kalliola, Lauri; and Malkia, Hannu, 4,642,164, Cl. 162-207.000.
Huisma, Camiel, 4,641,392, Cl. 15-302.000.
Ozasa, Susumu: *See*—
Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.
Packard, Roger E.; and Thomas, Jacob E., to NCR Corporation. Cordless electronic thermometer. 4,642,785, Cl. 364-557.000.
Padilla, Rigoberto. Ambulatory brace assembly. 4,641,639, Cl. 128-83.500.
Palffy, Janos. Holder for hamburgers and the like. 4,641,752, Cl. 206-583.000.
Palmquist, Donald L.; and Jenkins, Thomas C., to Ohio Agricultural Research and Development Center, The. Process for feeding ruminant animals and composition for use therein. 4,642,317, Cl. 514-558.000.
PanCanadian Petroleum Limited: *See*—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.
Paper Converting Machine Company: *See*—
Bradley, John J.; and Hansen, Debra K., 4,642,109, Cl. 604-385.00Z.
Papuga, Donald M.: *See*—
Matzner, Markus; and Papuga, Donald M., 4,642,327, Cl. 525-434.000.
Pares Olivet, Eulalia: *See*—
Elia De Miguel, Maria-Fe; Miro Roig, Pedro; and Pares Olivet, Eulalia, 4,642,288, Cl. 435-99.000.
Parker, Lanny L., to Codex Corporation. CMOS input buffer accepting TTL level inputs. 4,642,488, Cl. 307-475.000.
Pasar, Inc.: *See*—
Pecukonis, Joseph P., 4,642,556, Cl. 324-67.000.
Pascaloff, John H., to Hall Surgical, division of Zimmer, Inc. Apparatus for translating rotational motion and torque. 4,641,551, Cl. 74-785.000.
Pascarella, Vincent J.: *See*—
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., 4,642,242, Cl. 427-2.000.
Pastor, Stephen D.: *See*—
Spivack, John D.; Pastor, Stephen D.; and Odorisio, Paul, 4,642,382, Cl. 568-12.000.
Pastva, John V., to Eastern Company, The. Closure control mechanism. 4,641,865, Cl. 292-5.000.
Patroni, Anthony F., to Boardwalk Regency Corporation, a part interest. Rod joint. 4,641,992, Cl. 403-382.000.
Pattison, Thomas W.: *See*—
Kreft, Anthony F., III; Pattison, Thomas W.; and Musser, John H., 4,642,347, Cl. 546-181.000.
Paul, James E.: *See*—
Fucito, Dermot T.; Paul, James E.; and Markovic, Milan, 4,642,583, Cl. 333-14.000.
Paulsson, Bengt: *See*—
Andersson, Karl G., deceased; and Paulsson, Bengt, 4,641,464, Cl. 52-16.000.
Pavlak, John J.; and Nestor, Charles R., to General Motors Corporation. Electrical connector having a funnel wrap wire crimp barrel. 4,641,911, Cl. 339-276.00T.
Pavlov, Todor: *See*—
Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., 4,642,089, Cl. 604-4.000.
Paxton, Harold G. Tow apparatus and method of installation. 4,641,597, Cl. 114-253.000.
Peabody Noise Control, Inc.: *See*—
Fearon, William W.; and Macy, Arnel M., 4,641,726, Cl. 181-292.000.
Pecen, Jiri, to Tencor Instruments. Particle position correlator and correlation method for a surface scanner. 4,641,967, Cl. 356-237.000.
Peck, Peter F.: *See*—
Wedgwood, Francis A.; Peck, Peter F.; and Stevens, Michael P., 4,642,687, Cl. 358-110.000.
Peck, Wilbur M., Jr.: *See*—
Wallace, Stanley J.; Jedlicka, Josef E.; and Peck, Wilbur M., Jr., 4,641,949, Cl. 355-3.0SH.
Pecukonis, Joseph P., to Pasar, Inc. Tracing electrical conductors by high-frequency constant-energy-content pulse loading. 4,642,556, Cl. 324-67.000.
Pedersen, Allan S.: *See*—
Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, 4,641,537, Cl. 73-861.120.
Peffley, Richard D.: *See*—
Turner, Robert B.; Peffley, Richard D.; and Vanderhider, James A., 4,642,320, Cl. 521-176.000.
Penn, Cecil W., to Sperry Corporation. Apparatus and method for measuring linewidth and convergence in a color cathode ray tube display system. 4,642,529, Cl. 315-368.000.
Pennington, Edward J., to General Motors Corporation. Laser welding of galvanized steel. 4,642,446, Cl. 219-121.0LD.
Pennwalt Corporation: *See*—
De Stefanis, Vincent A.; Erickson, Robert W.; and Ranum, Peter M., 4,642,237, Cl. 426-64.000.
Pepsi Co, Inc.: *See*—
Rakucewicz, John J., 4,641,693, Cl. 141-98.000.
Perny, Didier, to Thomson-CSF. Visual display process for sonars. 4,642,801, Cl. 367-88.000.
Perry, Robert D. Sexual erection prothesis and method of use. 4,641,638, Cl. 128-79.000.
Person, Stanley. Immunologically reactive non-glycosylated amino acid chains of glycoprotein B of herpes virus types 1 and 2. 4,642,333, Cl. 530-350.000.
Personick, Stewart D., to Bell Communications Research, Inc. Shared laser lightwave transmission systems. 4,642,804, Cl. 370-3.000.
Persson, Bendt: *See*—
Lande, Goran; and Persson, Bendt, 4,641,775, Cl. 228-2.500.
Pestcon Systems, Inc.: *See*—
Gunn, Lawrence H., 4,641,573, Cl. 99-482.000.
Peters, David; Denick, John, Jr.; and Talwar, Anil K., to Warner-Lambert Company. Magnesium trisilicate suitable for preparation of medicament adsorbates of antihistamines. 4,642,231, Cl. 424-15.000.
Peters, Gerald; Hayton, Eugene P.; and Failor, Raymond A., to Simmons Universal Corporation. Armboard rail. 4,641,385, Cl. 5-82.00R.
Petersen, Christian C.; and Wettstein, Ernst C., to Polaroid Corporation. Method of comminuting rare earth powder for producing rare earth magnet. 4,641,787, Cl. 241-5.000.

Peterson, Francis C.: *See—*
Blucher, William J.; Ernst, Richard J.; and Peterson, Francis C., 4,642,012, Cl. 411-371.000.

Petersson, Nils A. I., to 501 Brio AB. Toy railway vehicle set with constricted opening recess in hub. 4,641,878, Cl. 295-49.000.

Petheram, John C., to RCA Corporation. Slab active lasing medium. 4,642,809, Cl. 372-66.000.

Petrenchik, John R., to Mercury Machine Company. Method and mold for molding investment casting patterns of irregular shape. 4,641,702, Cl. 164-137.000.

Petrie, Adelore F.: *See—*
Comroe, Richard A.; and Petrie, Adelore F., 4,642,807, Cl. 371-31.000.

Petritis, Demetris: *See—*
Lundin, Robert S.; and Petritis, Demetris, 4,642,494, Cl. 310-49.00R.

Petro-Canada Inc.: *See—*
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.

Petrofsky, Jerrold S., to Wright State University. Method and apparatus for providing stimulated exercise of paralyzed limbs. 4,642,769, Cl. 364-415.000.

Petsch, Heinrich: *See—*
Prescher, Guenter; Grund, Andreas; Petsch, Heinrich; and Bohme, Georg, 4,642,387, Cl. 568-446.000.

Peuralinna, Mauri J.: *See—*
Makinen, Juho K.; Peuralinna, Mauri J.; and Aaltonen, Olavi A., 4,642,133, Cl. 75-2.000.

Peytavin, Pierre, to Vallourec. Cold rolling process for tubes, by means of a Pilger rolling mill and the rolling mill for its execution. 4,641,513, Cl. 72-214.000.

Pfister, Gustav: *See—*
Guttinger, Hannes; and Pfister, Gustav, 4,642,471, Cl. 250-574.000.

Pfizer Inc.: *See—*
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,642,373, Cl. 560-139.000.

Pharmacia AB: *See—*
Bjorkman, Rune, 4,642,220, Cl. 422-101.000.
Johansson, Elof; and Ohman, Lena, 4,642,305, Cl. 514-182.000.
Yman, Rolf L., 4,642,232, Cl. 424-19.000.

Phillips, Charles F., to Emerson Electric Co. Chain-sprocket drive. 4,642,074, Cl. 474-156.000.

Phillips, Ian R.; Lodge, Robert H.; and Bunyan, Glen W., to N.J. Phillips Pty. Limited. Injector. 4,642,099, Cl. 604-136.000.

Phillips, Orville. Three-dimensionally adjustable picture hanger. 4,641,807, Cl. 248-480.000.

Phillips Petroleum Company: *See—*
Funk, Gary L.; Terhune, Robert D.; Kania, Cheryl C.; and Kallenberger, Robert H., 4,642,766, Cl. 364-402.000.
Railsback, Henry E., 4,642,202, Cl. 252-511.000.

Phillipson, Walter M.: *See—*
Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., 4,641,901, Cl. 339-14.00R.

Piber, Earl T.: *See—*
Bielinski, Ralph F.; Jaeschke, James R.; Krstic, Slobodan; Piber, Earl T.; and Theisen, Peter J., 4,642,481, Cl. 307-252.0UA.

Picard, Jean-Louis, to International Business Machines Corp. Repetitive sequence data transmission system. 4,642,810, Cl. 375-37.000.

Picker International Limited: *See—*
Young, Ian R., 4,642,568, Cl. 324-309.000.

Pienta, Lothar: *See—*
Mueller, Fritz; and Pienta, Lothar, 4,641,533, Cl. 73-706.000.

Pietrasz, Vincent: *See—*
Ward, Thomas H.; Costanzo, Phillip A.; Pietrasz, Vincent; and Soeder, Edmund J., 4,642,516, Cl. 313-481.000.

Pilcher, James W.: *See—*
Pilcher, Walter R.; and Pilcher, James W., 4,641,458, Cl. 49-20.000.

Pilcher, Walter R.; and Pilcher, James W. Jail door operating and locking mechanism. 4,641,458, Cl. 49-20.000.

Pilkington Brothers P.L.C.: *See—*
Hargreaves, Edward; and Simpson, Andrew F., 4,642,130, Cl. 65-60.100.

Pilkington P.E. Limited: *See—*
Freeman, Michael H., 4,641,934, Cl. 351-159.000.
Freeman, Michael H., 4,642,112, Cl. 623-6.000.

Pinckney, Warren J.: *See—*
Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinckney, Warren J.; and Wilson, Alan D., 4,642,438, Cl. 219-121.00L.

Pinnell, Martin C.: *See—*
Minshull, John F.; and Pinnell, Martin C., 4,642,790, Cl. 364-900.000.

Pinneo, George G.: *See—*
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Pioneer Electronic Corp.: *See—*
Yoshio, Junichi; Hirano, Toshio; Yasukawa, Kenichiro; and Yoshida, Masayuki, 4,642,812, Cl. 381-1.000.

Piotrowski, Bernhard; Buning, Robert; Janser, Bernhard; and Lang, Egon, to Dynamit Nobel AG. Method of making fibrids from thermoplastics. 4,642,262, Cl. 428-296.000.

Pipon, Yves; and Droulon, Georges, to A. M. Cousin & Cie. Screw slide system having a manual or electric control or the like. 4,641,806, Cl. 248-430.000.

Pitney Bowes Inc.: *See—*
Mallozzi, Joseph; Dinan, David E.; and Daniels, Edward P., 4,642,791, Cl. 364-900.000.

Pizzo, Joseph A., Sr.: *See—*
Schmidt, Richard; and Pizzo, Joseph A., Sr., 4,641,485, Cl. 53-429.000.

Planke, Tore, to A/S Tomra Systems. Method and an apparatus for the identification of metal cans. 4,642,470, Cl. 250-566.000.

Plaquin, Bernard A.; and Fradin, Louis, to Vallourec. Method and apparatus for making a joint for steel tubes. 4,641,410, Cl. 29-407.000.

Plastic Specialties and Technologies, Inc.: *See—*
Hale, Ronald G.; Woodley, Thomas R.; and Tornstrom, Paul K., 4,642,200, Cl. 252-400.540.

Plath, Peter: *See—*
Schirmer, Ulrich; Plath, Peter; Sauter, Hubert; and Wuerzer, Bruno, 4,642,132, Cl. 71-90.000.

Plessey Overseas Limited: *See—*
Lawton, Rodney J., 4,642,490, Cl. 307-540.000.

Plester, Jorg: *See—*
Salje, Ernst; and Plester, Jorg, 4,641,561, Cl. 83-835.000.

Plume, Steven H.: *See—*
Steiner, Robert E.; Cox, Karmen D.; Terpstra, Daniel A.; Metzger, James J., Jr.; and Plume, Steven H., 4,641,557, Cl. 83-71.000.

Pneumo Corporation: *See—*
Vanderlaan, Robert D.; and Heeres, Stanley D., 4,641,812, Cl. 251-65.000.

Podvin, T. Charles; and Porter, Gene A., to Micromanipulator Microscope Co., Inc. Apparatus for positioning flat objects for microscopic examination. 4,641,930, Cl. 350-529.000.

Pokalsky, Peter A., to Knogo Corporation. Electronic theft detection apparatus with responder elements on protected articles. 4,642,613, Cl. 340-572.000.

Poland, David A., to Northrop Corporation. Flexible assembly jig. 4,641,819, Cl. 269-45.000.

Polaroid Corporation: *See—*
Neely, Judith L., 4,641,943, Cl. 354-413.000.
Petersen, Christian C.; and Wettstein, Ernst C., 4,641,787, Cl. 241-5.000.

Poliak, John M.; and Anker, Herbert, to Leviton Manufacturing Company, Inc. Cordset clamp system. 4,641,905, Cl. 339-103.00B.

Polinsky, Samuel M.; Bierman, Larry W.; and Hempel, David A., to J. R. Simplot Co. Increased reduction of magnesium content by use of inorganic promoters during beneficiation of phosphate ores by flotation. 4,642,181, Cl. 209-167.000.

Poloni, Alfredo, to Danieli & C. Officine Meccaniche SpA. Straightening machines, and straightening machines thus improved. 4,641,511, Cl. 72-160.000.

Pomagalski, S.A.: *See—*
Bertrand, Jean-Jacques, 4,641,584, Cl. 104-173.200.
Tarassoff, Serge, 4,641,585, Cl. 104-173.200.

Pomeroy, Robert L. Method for detecting buried land mines by nondestructive means. 4,641,566, Cl. 89-1.130.

Ponticello, Gerald S.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,642,311, Cl. 514-316.000.

Pontoppidan, Knud: *See—*
Herbig, Henning; Heinze, Horst; Drachenberg, Franz; and Pontoppidan, Knud, 4,642,652, Cl. 343-915.000.

Pope, Daniel F.: *See—*
Lundberg, Krister; Tidstam, Goran; and Pope, Daniel F., 4,641,969, Cl. 356-343.000.

Pope, William T. Liquid heating system. 4,641,590, Cl. 110-341.000.

Popelka, Frank E. Hay bale wrapping machine. 4,641,484, Cl. 53-399.000.

Popp, Joachim, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Method and structure for preventing the ignition of titanium fires. 4,642,027, Cl. 415-177.000.

Poque, Dionysius J.; and Zinnen, Norbert, to Uniroyal Englebert Reifen GmbH. Vehicle wheel for a pneumatic tire. 4,641,670, Cl. 152-158.000.

Porschen, Jorg: *See—*
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, 4,642,369, Cl. 560-77.000.
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, 4,642,377, Cl. 562-483.000.

Portable Isokinetics, Inc.: *See—*
Mattox, Ernest M., 4,641,832, Cl. 272-67.000.

Porter, Gene A.: *See—*
Podvin, T. Charles; and Porter, Gene A., 4,641,930, Cl. 350-529.000.

Position Orientation Systems, Ltd.: *See—*
Hansen, Per K., 4,642,786, Cl. 364-559.000.

Potter, David O.: *See—*
Lombardi, Steven A.; and Potter, David O., 4,642,479, Cl. 307-141.000.

Potwora, William E.: *See—*
Strom, Stephen A.; Schnuelle, Kenneth W.; and Potwora, William E., 4,642,607, Cl. 340-310.00A.

Powell, Leon T., to McKenzie Taxidermy Supply, Inc. Taxidermy mold with means for holding eye within mold during formation of taxidermy form, and method. 4,642,209, Cl. 264-46.400.

Powers, Maston L.; Dodson, Christopher J.; Moore, John S.; and Ghassemi, Farhad, to Conoco Inc. Controlling steam distribution. 4,641,709, Cl. 166-252.000.

Pozzo, William M.; and Butler, John L., to Raytheon Company. Elimination of magnetic biasing using magnetostrictive materials of opposite strain. 4,642,802, Cl. 367-168.000.

PPG Industries, Inc.: *See—*
Ranka, Ajay I.; and Das, Suryya K., 4,642,323, Cl. 524-458.000.

Prescher, Guenter; Grund, Andreas; Petsch, Heinrich; and Boehme, Georg, to Degussa Aktiengesellschaft. Process for the production of 3-cyclohexene-1-carboxaldehyde. 4,642,387, Cl. 568-446.000.

Prescott, Rochelle; and Leiner, Dennis C., to Dyonics, Inc. Chromatic aberration corrected gradient index lens system. 4,641,927, Cl. 350-413.000.

Price, David E.: *See*—
Winter, Edward M.; Price, David E.; and Hook, James E., 4,641,588, Cl. 110-203.000.

Price, Diana R.: *See*—
Woo, Edmund P.; and Price, Diana R., 4,642,351, Cl. 548-317.000.

Price, Lynn A., II: *See*—
Johnson, Eric A.; and Price, Lynn A., II, 4,642,618, Cl. 340-683.000.

Prime Computer, Inc.: *See*—
Goodwin, Peter A., 4,642,616, Cl. 340-654.000.

Pritchett, James A. Boat lift with self aligning attachment. 4,641,595, Cl. 114-44.000.

Process and Cryongenic Services, Inc.: *See*—
Been, Thomas S., 4,641,680, Cl. 137-312.000.

Process Evaluation and Development Corporation: *See*—
Villavicencio, Eduardo J.; and Arana, Jorge E., 4,641,792, Cl. 241-74.000.

Procter & Gamble Company, The: *See*—
Dornbusch, Arthur H.; and Schanzle, Roger E., 4,641,746, Cl. 206-44.00R.

Progesco, S.A.: *See*—
Mesa, Jesus G., 4,641,459, Cl. 49-35.000.

Protoned B.V.: *See*—
Brauning, Egon, 4,641,885, Cl. 297-300.000.

Provost, Charles. Post-combustion gas-burner of a hydrogen peroxide emulsion. 4,642,045, Cl. 431-4.000.

Puchta, Rolf: *See*—
Kruse, Hans; Koester, Klaus; Carduck, Franz-Josef; Wilsberg, Heinz-Manfred; and Puchta, Rolf, 4,642,197, Cl. 252-98.000.

Punako, Stephen: *See*—
Gallusser, David O.; and Punako, Stephen, 4,641,899, Cl. 339-59.00M.

Quast, Armin W.; and Horstmann, Karl H., to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Arrangement for controlling the air flow over aerodynamic profiles. 4,641,799, Cl. 244-207.000.

Quinn, Robert E., to Lubrizol Corporation, The. Dispersant salts. 4,642,330, Cl. 528-335.000.

Quinn, Susanne M. Honey-moon. 4,642,251, Cl. 428-7.000.

R & H Technologies, Inc.: *See*—
Heine, Otto R.; and Riede, Peter M., 4,641,864, Cl. 285-179.000.

R. R. Donnelley & Sons Company: *See*—
Bernstein, Irwin B., 4,641,579, Cl. 101-451.000.

Raasch, Hans; and Wassenhoven, Heinz-Georg, to W. Schlafhorst & Co. Device for feeding-in a thread end into a spinning nip of a friction spinning machine. 4,641,494, Cl. 57-401.000.

Rabe, Bernd, to Deere & Company. Single lever control arrangement. 4,641,545, Cl. 74-476.000.

Rabenstein, Heinrich: *See*—
Gummelt, Klaus; Schulz, Jurgen; Salamon, Klaus; and Rabenstein, Heinrich, 4,642,600, Cl. 338-34.000.

Radcliffe, Jerry K., to International Business Machines Corp. Power supplies with magnetic amplifier voltage regulation. 4,642,743, Cl. 363-21.000.

Raets, Hubert C., to U.S. Philips Corporation. Circuit arrangement for switching a current in an inductive load. 4,642,750, Cl. 363-56.000.

Raikka Oy: *See*—
Hyyppa, Juho, 4,642,147, Cl. 149-19.900.

Railsback, Henry E., to Phillips Petroleum Company. Conductive (hard) rubber compositions. 4,642,202, Cl. 252-511.000.

Rajoharison, Harivelo G.; and Roussel, Christian M., to Eastman Kodak Company. Process for preparing pyrylium salts. 4,642,359, Cl. 549-356.000.

Rak, Stanley C. Interactive security system. 4,642,631, Cl. 340-825.310.

Rakucewicz, John J., to Pepsi Co, Inc. Bulk syrup delivery system with a vent and pressure supply valve. 4,641,693, Cl. 141-98.000.

Ralston Purina Company: *See*—
Friend, Beverly A.; Gierhart, Dennis L.; and O'Brien, Judy K., 4,642,236, Cl. 426-44.000.
Lin, Santa H. C.; and Cho, Myong J., 4,642,238, Cl. 426-74.000.

Ramot University Authority for Applied Research and Industrial Development Ltd.: *See*—
Nevo, Zvi; and Itay, Samuel, 4,642,120, Cl. 623-16.000.

Ramsey, Russel G., to Central Plastics Company. Thermoplastic fitting electric heat welding method and apparatus. 4,642,155, Cl. 156-359.000.

Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, to Oy Partek Ab. Window. 4,641,466, Cl. 52-171.000.

Ranka, Ajay I.; and Das, Suryya K., to PPG Industries, Inc. Process for preparing latex polymers from gaseous monomers. 4,642,323, Cl. 524-458.000.

Ranum, Peter M.: *See*—
De Stefanis, Vincent A.; Erickson, Robert W.; and Ranum, Peter M., 4,642,237, Cl. 426-64.000.

Rao, Dhulipala M.: *See*—
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Rao, Kameswara K., to Intel Corporation. CMOS E^2PROM decoding circuit. 4,642,798, Cl. 365-230.000.

Rapoport, Jury M.: *See*—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davituliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

Rasch, Klaus-Dieter; and Strobl, Gerhard, to Telefunken Electronic GmbH. Solar cell. 4,642,414, Cl. 136-256.000.

Raschbichler, Hans-Georg: *See*—
Miller, Luitpold; and Raschbichler, Hans-Georg, 4,641,586, Cl. 104-284.000.

Ravipati, Sitaramaiah: *See*—
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Ray, Douglas M.; and Weihl, Richard H. Protective sock for rod and reel. 4,641,454, Cl. 43-26.000.

Raymond, Theodore E.: *See*—
Bucher, George D.; and Raymond, Theodore E., 4,642,016, Cl. 414-421.000.

Raytek, Inc.: *See*—
Carlson, Paul S., 4,642,454, Cl. 250-221.000.

Raytheon Company: *See*—
Pozzo, William M.; and Butler, John L., 4,642,802, Cl. 367-168.000.

RCA Corporation: *See*—
Andrevski, Zygmunt M., 4,642,692, Cl. 358-229.000.
Connolly, John C.; and Botez, Dan, 4,642,143, Cl. 148-171.000.
Dackow, Paul N., 4,642,772, Cl. 364-431.040.
George, John B., 4,642,696, Cl. 358-243.000.
Hinn, Werner, 4,642,690, Cl. 358-169.000.
Hoover, Alan A., 4,642,532, Cl. 315-386.000.
Jastrzebski, Lubomir L.; and Lagowski, Jacek, 4,642,565, Cl. 324-158.00R.
Levine, Peter A., 4,641,963, Cl. 356-124.500.
Nyul, Paul; and Hedel, Rudolph H., 4,642,513, Cl. 313-110.000.
Petheram, John C., 4,642,809, Cl. 372-66.000.
Rodriguez-Cavazos, Enrique, 4,642,530, Cl. 315-371.000.
Sakarya, Dursun, 4,642,691, Cl. 358-188.000.
Walinsky, Paul; Rosen, Arye; and Greenspon, Arnold J., 4,641,649, Cl. 128-303.100.

Recasens, Joseph, to Societe Europeenne des Produits Refractaires. Process for the rapid assembly of elements composing a structure. 4,641,589, Cl. 110-341.000.

Redlich, Robert W., to Sunpower, Inc. Adaptive regulation system for a linear alternator driven by a free-piston stirling engine. 4,642,547, Cl. 322-3.000.

Reed, Michael A.; and McGrew, Gordon N., to Wm. Wrigley Jr. Company. Chewing gum with center fill comprising thaumatin or monellin and method. 4,642,235, Cl. 426-5.000.

Rees, John E.: *See*—
Davies, David J. G.; Meakin, Brian J.; and Rees, John E., 4,642,234, Cl. 424-78.000.

Reeves, Roger D.; and Hawkey, Dale F. Ultrasonic inspection apparatus and method for locating multiple defects in eccentric wall tubular goods. 4,641,531, Cl. 73-622.000.

Regan, Albert M., to Hughes Tool Company. Metal seal for a tubular connection. 4,641,841, Cl. 277-30.000.

Reichenbach, Thomas G., to Ford Motor Company. Motor vehicle anti-roll stabilizer system. 4,641,856, Cl. 280-772.000.

Reid, Lola C. M.; and Rojkind, Marcos, to Albert Einstein College of Medicine of Yeshiva University, a division of Yeshiva University. Method for isolation of connective tissue biomatrix. 4,642,292, Cl. 435-240.000.

Reinecke, Paul: *See*—
Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.

Rekewitz, Rudolf. Housing cover for printers. 4,641,982, Cl. 400-690.100.

Remco: *See*—
Glesmann, Herbert C.; and Thomas, Ronald G., 4,642,604, Cl. 340-60.000.

REMS-WERK Christian Foll und Sohne GmbH & Co.: *See*—
Wagner, Rudolf, 4,642,002, Cl. 408-105.000.

Renga, James M., to Dow Chemical Company, The. Process for making aromatic ethers. 4,642,349, Cl. 546-302.000.

Renken, Terry L., to Texaco Inc. Catalyst composition. 4,642,303, Cl. 502-315.000.

Reprogle, Layton J.; and Reprogle, Truman B. Boat dock and lift. 4,641,596, Cl. 114-44.000.

Reprogle, Truman B.: *See*—
Reprogle, Layton J.; and Reprogle, Truman B., 4,641,596, Cl. 114-44.000.

Research Association of Synthetic Dyestuffs: *See*—
Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, 4,642,339, Cl. 534-650.000.

Research, Incorporated: *See*—
Anderson, James R., 4,642,734, Cl. 361-380.000.

Ressel, Herbert; Haas, Hans; and Krause, Johannes, to Hoechst Aktiengesellschaft. Process for reducing iron and vanadium in phosphoric acid solution. 4,642,224, Cl. 423-321.00R.

Rethwish, William F.; and Schneider, Samuel, to Rohr Industries, Inc. Automatic metallic honeycomb core manufacturing machine. 4,642,436, Cl. 219-78.110.

Reynolds, Gary R.: *See*—
Dunkerton, Stephen H.; Reynolds, Gary R.; Chapman, Scott G.; and Erickson, Gary D., 4,642,633, Cl. 340-825.760.
Rhone-Poulenc Sante: *See*—
Cotrel, Claude; Guyon, Claude; Roussel, Gerard; and Taurand, Gerard, 4,642,308, Cl. 514-253.000.
Riaziat, Majid; and Zdasiuk, George A., to Varian Associates, Inc. Tapered five-port waveguide star junction. 4,642,587, Cl. 333-125.000.
Rice, James S.; and Klohn, William L. Wheelchair adapter wheel. 4,641,850, Cl. 280-289.0WC.
Rice, Roy W., to United States of America, Navy. Hot rolling of ceramics by the use of self propagating synthesis. 4,642,218, Cl. 419-11.000.
Rice, Roy W., to United States of America, Navy. BN coating of ceramic fibers for ceramic fiber composites. 4,642,271, Cl. 428-698.000.
Richard Wolf GmbH: *See*—
Hutterer, Frieder; Buess, Gerd; and Boebel, Manfred, 4,641,652, Cl. 128-334.00R.
Richardson, C. Patrick: *See*—
Gasparaitis, Bernard V.; and Richardson, C. Patrick, 4,641,925, Cl. 350-345.000.
Richmond, Douglass S., to Kendall McGaw Laboratories, Inc. Sterilant additive holder for CAPD sets. 4,642,091, Cl. 604-29.000.
Ricker, Dennis J.: *See*—
Elliott, James O.; and Ricker, Dennis J., 4,642,538, Cl. 318-139.000.
Ricoh Company, Ltd.: *See*—
Ikesue, Masumi; and Ikeda, Takashi, 4,641,945, Cl. 355-3.0DD.
Ito, Tadashi; Jinnai, Koichiro; Koike, Takahisa; Murai, Toshiharu; Fukazawa, Takao; and Ishima, Kazumi, 4,642,653, Cl. 346-1.100.
Wada, Yoshinori, 4,642,697, Cl. 358-257.000.
Yuasa, Kazuhiro, 4,641,955, Cl. 355-14.0TR.
Riddle, Harry W.: *See*—
Vlasek, David J.; and Riddle, Harry W., 4,641,776, Cl. 228-155.000.
Riede, Peter M.: *See*—
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Riedel, Claus: *See*—
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Riegel, Leo W.: *See*—
Gold, Raymond D.; and Riegel, Leo W., 4,641,820, Cl. 269-58.000.
Rieter Machine Works Limited: *See*—
Flueli, Adolf; Oswald, Heinz; and Schefer, Kurt, 4,641,793, Cl. 242-18.0PW.
Riker Laboratories, Inc.: *See*—
Leir, Charles M., 4,642,384, Cl. 568-337.000.
Ring, Thomas F., to Fasco Controls Corporation. Switch mechanism with combination spring and assembly retainer. 4,642,432, Cl. 200-155.00R.
Rink, Frederick J., Jr.: *See*—
Archibald, James B.; and Rink, Frederick J., Jr., 4,642,498, Cl. 310-71.000.
Ritschel, Werner. Process for preparing derivatives of the monoamide of terephthalic acid. 4,642,375, Cl. 562-442.000.
Rizzo, Christina M.: *See*—
Bondy, Daniel A.; East, Judith A.; and Rizzo, Christina M., 4,641,387, Cl. 5-508.000.
Roachsmith, Humphrey: *See*—
Brown, Christopher R.; and Roachsmith, Humphrey, 4,641,803, Cl. 246-34.0CT.
Robert Bosch GmbH: *See*—
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Friebe, Karl-Heinz; Heinz, Karl-Otto; and Scholten, Werner, 4,642,030, Cl. 417-203.000.
Maisch, Wolfgang; and Treiber, Jurgen, 4,642,602, Cl. 338-162.000.
Roberts, Alfred L., to Delta Salvage Energy, Inc. Cell boiler. 4,641,606, Cl. 122-214.000.
Roberts, Joseph M., Sr. Fishing rod holder having integral alarm and mounting structure. 4,641,453, Cl. 43-17.000.
Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, to AGB Research. Storing data relating to television viewing. 4,642,685, Cl. 358-84.000.
Roberts, Peter A. Methods and apparatus for funding future liability of uncertain cost. 4,642,768, Cl. 364-408.000.
Robertshaw Controls Company: *See*—
Dodson, David M., 4,641,778, Cl. 236-20.00R.
Robertson, David W.: *See*—
Beedle, Edward E.; and Robertson, David W., 4,642,379, Cl. 564-155.000.
Robinson, Larry D.: *See*—
Anderson, William J.; Anderson, Wayne R.; and Robinson, Larry D., 4,641,571, Cl. 98-72.000.
Robotic Systems, Inc.: *See*—
Rosendale, John V., 4,641,757, Cl. 212-205.000.
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Spring-biased furniture door hinge providing increased opening angle. 4,641,394, Cl. 16-302.000.
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft mbH. Furniture hinge with axle members mounting hinge links to hinge casing and retained in holding flanges. 4,641,396, Cl. 16-370.000.
Rockey, Arthur G. Medical sleeve. 4,641,653, Cl. 128-344.000.
Rockwell International Corporation: *See*—
Centala, John P.; and McElreath, Kenneth W., 4,642,774, Cl. 364-434.000.
Dunn, Charlton, 4,642,023, Cl. 415-53.00R.
Nelson, David A., 4,642,639, Cl. 342-47.000.
Sheem, Sang K., 4,641,914, Cl. 350-96.150.
Rockwell-Rimoldi S.p.A.: *See*—
Draghicchio, Pietro, 4,641,591, Cl. 112-155.000.
Marchesi, Franco, 4,641,592, Cl. 112-162.000.
Rodi, Anto; and Blasius, Udo, to Heidelberger Druckmaschinen AG. Circuit arrangement using for a light barrier for detecting sheet-feeding faults in a printing press. 4,642,455, Cl. 250-221.000.
Rodriguez-Cavazos, Enrique, to RCA Corporation. Raster distortion correction circuit. 4,642,530, Cl. 315-371.000.
Rogers, Noel A. Automatic sensitivity adjustment and audio muting for aircraft marker beacon receiver. 4,642,646, Cl. 342-407.000.
Rogers, Peter R., to Cam Gears Limited. Method of forming a rack member. 4,641,406, Cl. 29-159.200.
Rogers, Richard B.; and Gerwick, B. Clifford, III, to Dow Chemical Company, The. Fluorophenoxyphenoxypropionates and derivatives thereof. 4,642,338, Cl. 534-558.000.
Roggwiller, Peter; and Sittig, Roland, to BBC Brown, Boveri & Company Limited. Semiconductor device having a blocking capability in only one direction. 4,642,669, Cl. 357-52.000.
Rogier, Edgar R., to Henkel Corporation. High molecular weight products. 4,642,391, Cl. 568-624.000.
Rogner, Ludwig, to Siemens Aktiengesellschaft. High-frequency seal for casing coverings and doors. 4,642,416, Cl. 174-35.0GC.
Rohde, Kenneth A. Tree felling, log cutting and splitting machine. 4,641,694, Cl. 144-3.00K.
Rohr Industries, Inc.: *See*—
Rethwish, William F.; and Schneider, Samuel, 4,642,436, Cl. 219-78.110.
Rohrer, Edwin H., to Westinghouse Electric Corp. Apparatus for adjustably mounting ultrasonic testing devices. 4,641,532, Cl. 73-637.000.
Rohsler, Ivor C.; and Clark, Anthony F. C., to Lucas Industries Public Limited Company. Semi-conductor assembly. 4,642,671, Cl. 357-79.000.
Rojkind, Marcos: *See*—
Reid, Lola C. M.; and Rojkind, Marcos, 4,642,292, Cl. 435-240.000.
Rolls-Royce plc: *See*—
Woodward, Clifford S., 4,641,782, Cl. 239-265.290.
Rolm Corporation: *See*—
Dumas, Gregory P.; and Sutterlin, Philip H., 4,642,805, Cl. 370-58.000.
Rongen, Josephus W.; and van Cooten, Robertus, to Oce-Nederland B. V. Exposure system. 4,641,950, Cl. 355-3.00R.
Rooney, Allen J., III: *See*—
Illuzzi, Vincent A.; Kutzavitch, Walter G.; and Rooney, Allen J., III, 4,642,550, Cl. 323-222.000.
Rooney, John M.: *See*—
Harris, Stephen J.; Woods, John G.; and Rooney, John M., 4,642,362, Cl. 556-419.000.
Root, John P.: *See*—
Blevins, Gerald G.; Johnson, Fred, Jr.; Lentz, Frank R.; and Root, John P., 4,641,407. Cl. 29-237.000.
Ropars, Marcel; and Bloch, Bertrand, to Societe Nationale des Poudres et Explosifs; and Office National d'Etudes et de Recherches Aerospatiales. Thermoset polymers and prepolymers with rapid curing, obtained by polycondensation of pyridine derivatives and aromatic dialdehydes and adding of phenolic compounds. 4,642,264, Cl. 428-367.000.
Rosa, Daniele S. A. Posterior chamber intraocular lens. 4,642,114, Cl. 623-6.000.
Rosa, Jean; Castaigne, Jean-Paul; Demarne, Henri; and Tozzolino, Pierre, to Sanofi; and Institut National de la Sante et de la Recherche Medicale. Cyclic dithiodiacetamides and compositions containing them. 4,642,306, Cl. 514-222.000.
Rosen, Arye: *See*—
Walinsky, Paul; Rosen, Arye; and Greenspon, Arnold J., 4,641,649, Cl. 128-303.100.
Rosen, Gerald M. Traction device. 4,641,637, Cl. 128-75.000.
Rosen, Perry: *See*—
Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,642,364, Cl. 556-438.000.
Rosendale, John V., to Robotic Systems, Inc. Circulating latch transport mechanism for overhead cranes. 4,641,757, Cl. 212-205.000.
Ross, Bruce A., to Combustion Engineering, Inc. Method of and apparatus for detecting erosion. 4,642,557, Cl. 324-71.200.
Ross, David S.: *See*—
Carr, Richard V. C.; Toseland, Bernard A.; and Ross, David S., 4,642,396, Cl. 568-934.000.
Rossi, Frank R. Novelty display device. 4,641,445, Cl. 40-410.000.
Roth, Emil: *See*—
Thalmann, Alfred; Lehmann, Ernesto; Roth, Emil; and Gerber, Walter, 4,642,154, Cl. 156-272.200.
Roth, Robert B. Frame retaining clip. 4,641,441, Cl. 40-156.000.
Rotorcafe AG: *See*—
Varga, Franz, 4,641,572, Cl. 99-286.000.
Rotta Research Laboratorium S.p.A.: *See*—
Senin, Paolo; Makovec, Francesco; and Rovati, Luigi, 4,642,340, Cl. 536-55.200.
Roussel, Christian M.: *See*—
Rajoharison, Harivelo G.; and Roussel, Christian M., 4,642,359, Cl. 549-356.000.
Roussel, Gerard: *See*—
Cotrel, Claude; Guyon, Claude; Roussel, Gerard; and Taurand, Gerard, 4,642,308, Cl. 514-253.000.

Roussel Uclaf: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,642,372, Cl. 560-124.000.

Rousset, Philippe: *See—*
Arnaudeau, Marcel; and Rousset, Philippe, 4,641,679, Cl. 137-88.000.

Roux, Marius, to Societe Anonyme: SABLA. Gasket incorporating implants for interfitting pipes. 4,641,858, Cl. 285-94.000.

Rovati, Luigi: *See—*
Senin, Paolo; Makovec, Francesco; and Rovati, Luigi, 4,642,340, Cl. 536-55.200.

Rowe, Ronnie R.: *See—*
Batchelor, Ronnie K.; and Rowe, Ronnie R., 4,641,509, Cl. 70-388.000.

Roxor Corporation: *See—*
Blom, C. James, 4,641,933, Cl. 350-613.000.

Rozelle, Bradley J.: *See—*
Martin, Robert H.; Rozelle, Bradley J.; and Breier, Thomas J., 4,641,804, Cl. 248-205.100.

Rozmus, John J. Tooling for manufacture of electrical contacts. 4,641,514, Cl. 72-400.000.

Rozmus, John J. Electrical contacts. 4,641,910, Cl. 339-221.00R.

Rubin, Mae K.: *See—*
Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Valyocsik, Ernest W., 4,642,226, Cl. 423-328.000.

RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.: *See—*
Speich, Herrn H., 4,641,875, Cl. 294-82.110.

Rudelick, John, to Universal-Rundle Corporation. Axially symmetric valve assembly. 4,641,685, Cl. 137-625.310.

Rudnick, Leslie R., to Mobil Oil Corporation. Process for upgrading heavy petroleum feedstock. 4,642,175, Cl. 208-88.000.

Rudolph, Gert: *See—*
Schmekel, Gerald; and Rudolph, Gert, 4,641,667, Cl. 131-352.000.

Ruff, Gary F.: *See—*
Voss, Karl D.; Datte, Mark A.; and Ruff, Gary F., 4,641,703, Cl. 164-255.000.

Ruff, John D. Centrifugal compressor with adjustable diffuser. 4,642,026, Cl. 415-150.000.

Rumbaugh, James T.: *See—*
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,641,860, Cl. 285-38.000.

Runkel, Walter; Lenk, Erich; and Bauer, Karl, to Barmag Barmer Maschinenfabrik AG. Yarn heating chamber. 4,641,504, Cl. 68-5.00E.

Ruoff-Schafer, Rudolf, to Missel GmbH & Co. Insulating material for pipes. 4,642,253, Cl. 428-36.000.

Russ, David E., to Sundstrand Corporation. Motion transmitting and timing mechanism. 4,641,544, Cl. 74-435.000.

Russell, Stephen W.: *See—*
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., 4,642,198, Cl. 252-94.000.

Ruta, Joseph W., to S&C Electric Company. Trip signal generator for a circuit interrupter. 4,642,724, Cl. 361-96.000.

Rutan, Elbert L. Tandem or multi-winged high performance aircraft. 4,641,800, Cl. 244-218.000.

Ruth, Bruce M. Weight lifting bench with adjustable bench sections. 4,641,837, Cl. 272-123.000.

Ruthrof, Klaus; Korner, Rudolf; and Dorner, Jurgen, to Kraftwerk Union Aktiengesellschaft. Concentric three-conductor cable. 4,642,417, Cl. 174-36.000.

Rutschmann, Erwin, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Air intake system of a multicylinder internal combustion engine. 4,641,610, Cl. 123-52.0MV.

Ruttimann, August, to Hoffmann-La Roche Inc. Alpha-tocopherol intermediates. 4,642,361, Cl. 549-546.000.

Ruumpol, Geurt J., to Inductive Control Systems B.V. Contactless electric control-handle. 4,642,595, Cl. 336-135.000.

Rydz, Leon. Chain turbine system. 4,642,022, Cl. 415-5.000.

S&C Electric Company: *See—*
Ruta, Joseph W., 4,642,724, Cl. 361-96.000.

S & H Computer Systems, Inc.: *See—*
Sherrod, Phillip H., 4,642,756, Cl. 364-200.000.

Saad, Saad M., to Andrew Corporation. Superelliptical waveguide connection. 4,642,585, Cl. 333-21.00R.

Saariaho, Jorma: *See—*
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.

Saarinen, Kari, to Lannen Tehtaat Oy. Framing system. 4,642,014, Cl. 414-96.000.

Sadakane, Koji: *See—*
Ohira, Tsunehisa; Hirano, Shinji; and Sadakane, Koji, 4,642,713, Cl. 360-85.000.

Safe-T-Jack: *See—*
Arzouman, Harry H., 4,641,813, Cl. 254-8.00B.

Safe-Test, Inc.: *See—*
Alexander, William B.; and Frenger, Paul, 4,642,783, Cl. 364-551.000.

Safran, Frank: *See—*
Lemmers, Robert E.; Safran, Frank; and Brussee, Warren T., 4,641,966, Cl. 356-237.000.

St.-Michel, Andre , to Domtar Inc. Wood substrate having good flame resistance. 4,642,268, Cl. 428-453.000.

St. Vincent Medical Center: *See—*
Bondy, Daniel A.; East, Judith A.; and Rizzo, Christina M., 4,641,387, Cl. 5-508.000.

Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, to Kabushiki Kaisha Toshiba. Pulse combustor. 4,642,046, Cl. 431-354.000.

Saito, Morikuni: *See—*
Yahagi, Masakichi; Igaki, Tetsuo; Yosinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, 4,642,357, Cl. 549-226.000.

Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru. Photoconductive member having light receiving layer of A-Ge/A-Si and C. 4,642,277, Cl. 430-57.000.

Sakae Ringyo Co., Ltd.: *See—*
Nagashima, Satoshi, 4,642,075, Cl. 474-160.000.

Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, to Canon Kabushiki Kaisha. Focus detecting system. 4,641,942, Cl. 354-406.000.

Sakai, Yukio: *See—*
Nojiri, Naohiro; and Sakai, Yukio, 4,642,360, Cl. 549-534.000.

Sakaki, Mamoru: *See—*
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.

Sakamoto, Isamu: *See—*
Yamawaki, Masakatsu; Sakamoto, Isamu; Mizusawa, Kenichi; and Iwamoto, Eiji, 4,642,467, Cl. 250-492.300.

Sakamoto, Izumi; and Takagi, Kunihiko, to Unitika Ltd. Urethral catheter capable of preventing urinary tract infection and process for producing the same. 4,642,104, Cl. 604-264.000.

Sakamoto, Izumi; and Takagi, Kunihiko, to Unitika Ltd. Injector filled with an anti-cancer composition. 4,642,111, Cl. 604-890.000.

Sakamoto, Katsuji: *See—*
Yamazaki, Takashi; and Sakamoto, Katsuji, 4,641,794, Cl. 242-47.010.

Sakamoto, Tsutomu, to Tokyo Shibaura Denki Kabushiki Kaisha. Microinstruction controlled arithmetic control unit. 4,642,757, Cl. 364-200.000.

Sakarya, Dursun, to RCA Corporation. Television signal input filter. 4,642,691, Cl. 358-188.000.

Sakiyama, Kazuo: *See—*
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.

Sako, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Overcurrent relay. 4,642,597, Cl. 337-82.000.

Sako, Yuji: *See—*
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.

Salamon, Klaus: *See—*
Gummelt, Klaus; Schulz, Jurgen; Salamon, Klaus; and Rabenstein, Heinrich, 4,642,600, Cl. 338-34.000.

Salazar, Jose A.: *See—*
Morales, Alfredo L.; Galiasso, Roberto; Carrasquel, Angel R.; and Salazar, Jose A., 4,642,179, Cl. 208-217.000.

Saliterman, Steven S. Hemodynamic monitoring trainer. 4,642,055, Cl. 434-268.000.

Salje, Ernst; and Plester, Jorg, to Salje, Ernst. Disc-shaped tool. 4,641,561, Cl. 83-835.000.

Salzburg, Herbert: *See—*
Hajek, Manfred; Salzburg, Herbert; and Ziemann, Heinz, 4,642,344, Cl. 544-196.000.

Sameshima, Mutsuro: *See—*
Yoshimura, Takeshi; Sameshima, Mutsuro; Nakanishi, Toru; and Kato, Shigeo, 4,641,620, Cl. 123-432.000.

Samson, Wilfred J.; and Frisbie, Jeffrey S., to Advanced Cardiovascular Systems, Inc. Steerable balloon dilatation catheter assembly having dye injection and pressure measurement capabilities. 4,641,654, Cl. 128-344.000.

Sancier, Kenneth M.: *See—*
Sanjurjo, Angel; and Sancier, Kenneth M., 4,642,228, Cl. 423-350.000.

Sanden Corporation: *See—*
Terauchi, Kiyoshi, 4,642,034, Cl. 417-295.000.

Sandin, Nils H. Planting system. 4,641,457, Cl. 47-9.000.

Sanjurjo, Angel; and Sancier, Kenneth M. Fluxing system for reactors for production of silicon. 4,642,228, Cl. 423-350.000.

Sanofi: *See—*
Rosa, Jean; Castaigne, Jean-Paul; Demarne, Henri; and Tozzolino, Pierre, 4,642,306, Cl. 514-222.000.

Santrade Limited: *See—*
Bengtsson, Ulf A., 4,641,718, Cl. 175-331.000.
Wirfelt, Sven A. O., 4,642,006, Cl. 409-233.000.

Sanyo Electric Co., Ltd.: *See—*
Doutsubo, Nobuhide, 4,642,704, Cl. 360-10.200.
Tsutsumi, Masaru; Hagino, Hideo; Fujiwara, Osamu; and Goto, Hitoshi, 4,642,274, Cl. 429-35.000.

Sapitowicz, Thomas P.: *See—*
Stevens, Gerald S., Jr.; Sapitowicz, Thomas P.; and Davis, Edward D., 4,642,660, Cl. 346-140.00R.

Sarazin, Marc: *See—*
Bretaudeau, Francis; and Sarazin, Marc, 4,642,469, Cl. 250-561.000.

Sarcos, Inc.: *See—*
Jacobsen, Stephen C., 4,642,504, Cl. 310-308.000.

Sargent, Charles L.; Antos, John M.; Hoffman, John A.; and Cameron, John T., to Thetford Corporation. Portable toilet holding tank spout. 4,641,383, Cl. 4-323.000.

Saroul, Jacques: *See—*
Morille, Robert; and Saroul, Jacques, 4,642,560, Cl. 324-73.0PC.

Sasaki, Akira, to Mitsubishi Denki Kabushiki Kaisha. Reformer reaction control apparatus for a fuel cell. 4,642,273, Cl. 429-22.000.

Sasaki, Hitoshi; and Igota, Shoji, to Ajinomoto Co., Inc. Body for a pressure-resistant vessel. 4,642,252, Cl. 428-35.000.

Sasaki, Yasuchiyo: *See*—
Ishiwatari, Takeo; Sasaki, Yasuchiyo; Misawa, Rokuro; and Takao, Shingo, 4,641,690, Cl. 141-4.000.

Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, to Nippon Petrochemicals Company, Ltd. Electrical insulating oil and oil-filled electrical appliances. 4,642,730, Cl. 361-315.000.

Sato, Hiroaki: *See*—
Suzuki, Hitoshi; and Sato, Hiroaki, 4,642,508, Cl. 310-321.000.

Sato, Hiroshi; Ishii, Norio; and Hirose, Kenichi, to Sumitomo Chemical Company, Limited. Method for selective dealkylation of a dialkylbenzene at the paraposition thereof. 4,642,409, Cl. 585-486.000.

Sato, Makoto; and Matsuda, Shohei, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic braking pressure control apparatus for vehicles. 4,641,893, Cl. 303-113.000.

Sato, Shigeaki: *See*—
Tachida, Hiroki; Sato, Takane; and Sato, Shigeaki, 4,641,565, Cl. 84-431.000.

Sato, Takane: *See*—
Tachida, Hiroki; Sato, Takane; and Sato, Shigeaki, 4,641,565, Cl. 84-431.000.

Sato, Yoshio, to Kabushiki Kaisha Sato. Label strip. 4,642,256, Cl. 428-42.000.

Sato, Yuichi: *See*—
Tsunekawa, Tokuichi; Sato, Yuichi; Kawabata, Takashi; and Matsumura, Susumu, 4,642,451, Cl. 250-201.000.

Satoh, Hiroyuki: *See*—
Ikeda, Masaaki; Takahara, Wataru; Iteguchi, Junichi; Satoh, Hiroyuki; and Itoh, Shyuji, 4,642,732, Cl. 361-321.000.

Satoh, Masao, to Amada Metrecs Company, Limited. Bending tool. 4,641,516, Cl. 72-481.000.

Satonaka, Shinobu: *See*—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.

Saur, Roland, to Behr-Thomson Dehnstoffregler GmbH. Control device. 4,642,599, Cl. 337-397.000.

Sauter, Hubert: *See*—
Schirmer, Ulrich; Plath, Peter; Sauter, Hubert; and Wuerzer, Bruno, 4,642,132, Cl. 71-90.000.

Savioja, Heikki: *See*—
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.

Sawada, Akihiro, to Brother Kogyo Kabushiki Kaisha. Writing-plotting apparatus with keyboard. 4,642,779, Cl. 364-520.000.

Sawada, Daisaku; Sugaya, Masami; Imai, Ryuji; and Soga, Yoshinobu, to Toyota Jidosha Kabushiki Kaisha. Hydraulic control system for continuously variable transmission. 4,642,069, Cl. 474-28.000.

Sawyer, James L.: *See*—
Heitzmann, Richard F.; Fitzgerald, Mark; and Sawyer, James L., 4,642,137, Cl. 106-85.000.

Say, Donald L., to North American Philips Consumer Electronics Corp. Color cathode ray tube in-line electron gun structure incorporating deep saddle accelerating electrode. 4,642,515, Cl. 313-414.000.

Scala, Luciano C.: *See*—
Alvino, William M.; Fuller, Timothy J.; Cargnel, Louis A.; and Scala, Luciano C., 4,642,170, Cl. 204-181.400.

Scarpelli, August R.: *See*—
Nakanishi, Shigeo; Calco, Frank S.; and Scarpelli, August R., 4,642,523, Cl. 315-111.810.

Schacht, Ezra L. Loadcenter "plug-in" surge protector. 4,642,733, Cl. 361-363.000.

Schanzle, Roger E.: *See*—
Dornbusch, Arthur H.; and Schanzle, Roger E., 4,641,746, Cl. 206-44.00R.

Schauder, Colin D., to Westinghouse Electric Corp. Hidden DC-link AC/AC converter using bilateral power switches. 4,642,751, Cl. 363-159.000.

Schaumann, Wolfgang: *See*—
Michel, Helmut; Marzenell, Klaus; Kampe, Wolfgang; Bartsch, Wolfgang; and Schaumann, Wolfgang, 4,642,309, Cl. 514-269.000.

Schefer, Kurt: *See*—
Flueli, Adolf; Oswald, Heinz; and Schefer, Kurt, 4,641,793, Cl. 242-18.0PW.

Scheurer, Robert S.; and Hancock, Kendal, to Scheurer, Robert S. Cam locked slideable foot binder. 4,642,060, Cl. 441-70.000.

Schick, Jean-Francois, to Goro S.A. Device for providing an articulated coupling between two complementary series of belt-fasteners. 4,641,398, Cl. 24-33.00R.

Schimel, Keith A. Systems for the treatment of organic material and particularly sewage sludge. 4,642,187, Cl. 210-258.000.

Schirmer, Ulrich; Plath, Peter; Sauter, Hubert; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Aminothiadiazoles and their use for controlling undesirable plant growth. 4,642,132, Cl. 71-90.000.

Schleck, Herman A. Adjustable modular building. 4,641,477, Cl. 52-646.000.

Schlegel, Gary R. Clip for suspended ceiling gridwork. 4,641,987, Cl. 403-169.000.

Schlumberger Technology Corporation: *See*—
Chow, Edward Y.; and Kleinberg, Robert L., 4,641,724, Cl. 181-104.000.

Schmekel, Gerald; and Rudolph, Gert, to B.A.T. Cigarettenfabriken GmbH. Process of preparing nicotine N'-oxide and smoking products containing it. 4,641,667, Cl. 131-352.000.

Schmid, Eckhardt: *See*—
Egner-Walter, Bruno; Schmid, Eckhardt; and Scholl, Wolfgang, 4,641,389, Cl. 15-250.210.

Schmid, Hartmut, to DSL Dynamic Sciences Limited. Railway emergency brake system. 4,641,892, Cl. 303-47.000.

Schmidt, Christopher O.: *See*—
Iranmanesh, Ali; and Schmidt, Christopher O., 4,641,416, Cl. 29-576.00W.

Schmidt, Richard; and Pizzo, Joseph A., Sr., to Enviro-Spray Systems Incorporated. Container stuffing apparatus and method. 4,641,485, Cl. 53-429.000.

Schmidt, Robert J., to UOP Inc. High severity process for xylene production employing a transalkylation zone for xylene isomerization. 4,642,406, Cl. 585-477.000.

Schnackel, Jay F.; and Zverina, Karel. Semi-transferred arc in a liquid stabilized plasma generator and method for utilizing the same. 4,642,440, Cl. 219-121.0PP.

Schneider, Ortwin; and Georgitsis, Nikolaos, to Erweka Apparatebau GmbH. Holding device. 4,641,534, Cl. 73-856.000.

Schneider, Rainer: *See*—
Wehner, Wolfgang; Muller, Horst, deceased; and Schneider, Rainer, 4,642,322, Cl. 524-191.000.

Schneider, Samuel: *See*—
Rethwish, William F.; and Schneider, Samuel, 4,642,436, Cl. 219-78.110.

Schnuelle, Kenneth W.: *See*—
Strom, Stephen A.; Schnuelle, Kenneth W.; and Potwora, William E., 4,642,607, Cl. 340-310.00A.

Schoenberg, Andrew J.; and Friedrich, Marju L., to Kollmorgen Technologies Corporation. Heat activatable adhesive for wire scribed circuits. 4,642,321, Cl. 523-400.000.

Schoengen, Anton: *See*—
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, 4,642,369, Cl. 560-77.000.
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, 4,642,377, Cl. 562-483.000.

Scholl, Wolfgang: *See*—
Egner-Walter, Bruno; Schmid, Eckhardt; and Scholl, Wolfgang, 4,641,389, Cl. 15-250.210.

Scholten, Werner: *See*—
Friebe, Karl-Heinz; Heinz, Karl-Otto; and Scholten, Werner, 4,642,030, Cl. 417-203.000.

Schonherr, Andreas, to Siemens Aktiengesellschaft. Method and apparatus for operating a load supplied via an intermediate-link converter, especially an asynchronous machine, in the event of a network disturbance. 4,642,546, Cl. 318-798.000.

Schoofs, Franciscus A. C. M., to U.S. Philips Corporation. Field effect semiconductor device having improved voltage breakdown characteristics. 4,642,674, Cl. 357-23.800.

Schott Glaswerke: *See*—
Mennemann, Karl; and Grabowski geb. Marszalek, Danuta, 4,642,297, Cl. 501-78.000.

Schramm, Matthias: *See*—
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,642,310, Cl. 514-301.000.

Schrock, Alan: *See*—
Kirchhoff, Robert A.; Schrock, Alan; and Gilpin, Jo A., 4,642,329, Cl. 526-284.000.

Schubert, Wolf-Dieter: *See*—
Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, 4,642,135, Cl. 420-33.000.

Schukar, Gary W.: *See*—
Johnson, Dewey A.; Hamlin, Gregory P.; and Schukar, Gary W., 4,641,555, Cl. 83-29.000.

Schultheiss, Georg; von Minden, Charles; and Fritzke, Hans W., to GKSS Forschungszentrum Geesthacht GmbH. Method for avoiding or reducing the interactions and their consequences from contact of hot liquid metallic sodium with concrete. 4,642,300, Cl. 501-124.000.

Schultz, Kenneth E.; and Evans, William R., to Schultz, Kenneth E. Endotracheal tube/respirator tubing connecting lock mechanism and method of using same. 4,641,646, Cl. 128-207.140.

Schulz, Jurgen: *See*—
Gummelt, Klaus; Schulz, Jurgen; Salamon, Klaus; and Rabenstein, Heinrich, 4,642,600, Cl. 338-34.000.

Schumacher, Robert W.: *See*—
Harvey, Robin J.; Gallagher, Hayden E.; and Schumacher, Robert W., 4,642,522, Cl. 315-111.310.

Schutten, Herman P.: *See*—
Lade, Robert W.; Benjamin, James A.; and Schutten, Herman P., 4,642,665, Cl. 357-6.000.

Schwalm, Hans-Werner: *See*—
Grecksch, Hans; Schwalm, Hans-Werner; and Thomalla, Johannes, 4,641,740, Cl. 198-487.100.

Schwanke, Lavern H., to Foseco International Limited. Method and apparatus for microwave determination of liquid rate-of-rise using Doppler detection. 4,642,777, Cl. 364-476.000.

Schwarzkopf, Eugen, to Hotset Heizpatronen und Zubehor GmbH. Device for the electric heating and fluid cooling of an injection-molding machine nozzle. 4,642,043, Cl. 425-547.000.

Schwerdt, Friedrich W.: *See*—
Greschner, Johann; Schwerdt, Friedrich W.; and Trumpp, Hans J., 4,642,163, Cl. 156-643.000.

Sciaky S.A.: *See*—
Dard, Philippe, 4,642,518, Cl. 315-1.000.
Scientific Atlanta, Inc.: *See*—
Lowry, John D.; and Lucas, Keith, 4,642,688, Cl. 380-11.000.
Scoboria, Raymond, to O.E.M. Technical Sales, Inc. Flexible joint for pipes. 4,641,861, Cl. 285-39.000.
Scott, Bentley N., to Texas Instruments Incorporated. Stabilized microwave varactor. 4,642,580, Cl. 331-117.00D.
Scott, Richard P. I.: *See*—
Hewitt, Michael T. H.; Ballance, John W.; and Scott, Richard P. I., 4,642,806, Cl. 370-95.000.
Scovill Japan Kabushiki Kaisha: *See*—
Hasegawa, Yoshihiko, 4,641,401, Cl. 24-681.000.
Scripps Clinic and Research Foundation: *See*—
Cooper, Neil; and Mayes, James T., 4,642,284, Cl. 435-7.000.
Seal, Morton. Side loading boat lifts. 4,641,996, Cl. 405-2.000.
Seaman, Jeffrey M.: *See*—
Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, 4,642,425, Cl. 379-57.000.
Seanor, Donald A., to Xerox Corporation. Extended nip cleaning system. 4,641,956, Cl. 355-15.000.
Sederquist, Richard A., to International Fuel Cells Corporation. Integrated fuel cell and fuel conversion apparatus. 4,642,272, Cl. 429-17.000.
Seibert, Wolfram: *See*—
Belart, Juan; Burgdorf, Jochen; Bleckmann, Hans W.; Weise, Lutz; and Seibert, Wolfram, 4,641,895, Cl. 303-119.000.
Seiko Seiki Kabushiki Kaisha: *See*—
Higuchi, Toshiro; Mizuno, Takeshi; and Aikawa, Noboru, 4,642,500, Cl. 310-90.500.
Seino, Mituyoshi: *See*—
Matsumoto, Norio; Okuda, Shinya; Ohkuma, Osamu; and Seino, Mituyoshi, 4,641,980, Cl. 400-120.000.
Seki, Kazuhisa: *See*—
Matsuda, Shinichi; and Seki, Kazuhisa, 4,642,717, Cl. 360-105.000.
Seki, Masaki: *See*—
Kishi, Hajimu; Seki, Masaki; and Takegahara, Takashi, 4,642,754, Cl. 364-191.000.
Sekiguchi, Kanetaka: *See*—
Togashi, Seigo; and Sekiguchi, Kanetaka, 4,642,620, Cl. 340-713.000.
Sekine, Makoto; Okano, Haruo; and Horiike, Yasuhiro, to Kabushiki Kaisha Toshiba. Photoetreating apparatus. 4,642,171, Cl. 204-298.000.
Sekiya, Hitoshi: *See*—
Nakatsugawa, Kenji; Katayama, Aiichi; Sekiya, Hitoshi; and Hiratsuka, Shoji, 4,642,519, Cl. 315-1.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei, 4,642,243, Cl. 427-38.000.
Semin, Fikret; Guermandi, Romano; and Cucco, Gian C., to Societa' Pneumatici Pirelli S.p.A. Directional tires for automobiles. 4,641,696, Cl. 152-209.00R.
Senin, Paolo; Makovec, Francesco; and Rovati, Luigi, to Rotta Research Laboratorium S.p.A. Stable compounds of glucosamine sulphate. 4,642,340, Cl. 536-55.200.
Senn, Herbert: *See*—
Heiniger, Peter; Masek, Jaroslav; and Senn, Herbert, 4,642,025, Cl. 415-139.000.
Seno, Manabu: *See*—
Kuroyanagi, Yoshimitsu; Miyata, Teruo; and Seno, Manabu, 4,642,118, Cl. 623-15.000.
Senoh, Hideaki: *See*—
Torii, Takahiro; Ishiguro, Mamoru; and Senoh, Hideaki, 4,642,662, Cl. 346-215.000.
Senoh, Makoto: *See*—
Izumi, Shigeru; Senoh, Makoto; Tsumaki, Koji; and Miyata, Kenji, 4,641,526, Cl. 73-572.000.
Sensormatic Electronics Corporation: *See*—
Woolsey, Charles W.; Eskandry, Ezra D.; and Pinneo, George G., 4,642,640, Cl. 342-42.000.
Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikkawa, Katsumasa, to Hodogaya Chemical Co., Ltd. 6-tetrahydrofurfurylaminofluoran compound useful as a color former on an heat sensitive recording sheet. 4,642,663, Cl. 346-221.000.
Sepponen, Raimo E. Medical diagnostic microwave scanning apparatus. 4,641,659, Cl. 128-653.000.
Sergienko, Nikolai M., to Kievsky Nauchno-Issledovatelsky Institut Klinicheskoi I Experimentalnoi Khirurgii. Artificial eye lens. 4,642,115, Cl. 623-6.000.
Servas, Francis M.: *See*—
Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., 4,642,089, Cl. 604-4.000.
Servend International: *See*—
Landers, Jerry L.; and Fischer, Gregory E., 4,641,763, Cl. 222-129.100.
Setani, Michitaka: *See*—
Honda, Haruhisa; Tsuchiya, Hiroaki; Setani, Michitaka; and Tokuhara, Mitsuhiro, 4,641,944, Cl. 355-1.000.
Seydel, Scott O.; Letbetter, William D.; and Cutts, William H. Porous warp sizing apparatus. 4,641,404, Cl. 28-178.000.
Shah, Jitendera S., to Johnson & Johnson. Connective tissue prosthesis. 4,642,119, Cl. 623-13.000.
Shahnarian, Albert: *See*—
Krolikowski, F. John; and Shahnarian, Albert, 4,642,101, Cl. 604-164.000.
Shallenberger, John M.; and Ferlan, Stephen J., to Westinghouse Electric Corp. Reconstituting a nuclear reactor fuel assembly. 4,641,409, Cl. 29-401.100.
Shanklin, James R., Jr., to A. H. Robins Company, Incorporated. N-(amino)alkyl)-1-pyrrolidine, 1-piperidine and 1-homopiperidinecarboxamides (and thiocarboxamides) with sulfur linked substitution in the 2, 3 or 4-positions. 4,642,348, Cl. 546-216.000.
Shapiro, Marshall. Surgical instrument. 4,641,648, Cl. 128-303.00R.
Sharp, Daryl. Internal mass spectrometer interface to a gas chromatograph. 4,641,541, Cl. 73-864.810.
Sharp Kabushiki Kaisha: *See*—
Nagano, Fumikazu, 4,642,679, Cl. 358-75.000.
Yanagiuchi, Shigenobu; and Omori, Takuro, 4,642,761, Cl. 364-200.000.
Shedigian, Vandos, to Emhart Industries, Inc. Dielectric fluid for a capacitor. 4,642,731, Cl. 361-319.000.
Sheem, Sang K., to Rockwell International Corporation. Single mode operation with non-single mode optical fiber transmission cable. 4,641,914, Cl. 350-96.150.
Shell Oil Company: *See*—
Betteridge, Peter R., 4,642,289, Cl. 435-101.000.
Drent, Eit, 4,642,371, Cl. 560-114.000.
Shemtov, Sami. Connector for coupling a conduit to a junction box. 4,641,863, Cl. 285-158.000.
Shepherd, Michael T.: *See*—
Whitehead, Derek J.; and Shepherd, Michael T., 4,642,230, Cl. 424-15.000.
Sherrod, Phillip H., to S & H Computer Systems, Inc. Method and apparatus for scheduling the execution of multiple processing tasks in a computer system. 4,642,756, Cl. 364-200.000.
Shiba, Keisuke: *See*—
Takahashi, Hiroshi; Narutomi, Yasuhisa; Aotani, Yoshimasa; and Shiba, Keisuke, 4,642,283, Cl. 430-303.000.
Shibai, Hiroshiro: *See*—
Miyashiro, Shigeyoshi; Kida, Takao; Shiio, Tsuyoshi; and Shibai, Hiroshiro, 4,642,335, Cl. 530-409.000.
Shibasaki, Hiromi: *See*—
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.
Shibata, Katsuhiro: *See*—
Kawaguchi, Takeshi; Suzuki, Tsuguya; and Shibata, Katsuhiro, 4,641,731, Cl. 188-218.0XL.
Shibata, Masahiro, to Nippondenso Co., Ltd. Apparatus for determining the oxygen content in gases. 4,642,174, Cl. 204-408.000.
Shibuya, Kouji; and Imazeki, Chiharu, to Minolta Camera Kabushiki Kaisha. Thermal printer. 4,642,656, Cl. 346-76.0PH.
Shibuya, Nobuo: *See*—
Tabata, Mitsuo; and Shibuya, Nobuo, 4,642,468, Cl. 250-548.000.
Shields, Charles E. Method and apparatus for applying two piece connector blocks to multiconductor cable. 4,641,427, Cl. 29-857.000.
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,642,448, Cl. 219-216.000.
Shihabi, David S., to Mobil Oil Corporation. Conversion of olefins and paraffins to higher hydrocarbons. 4,642,404, Cl. 585-415.000.
Shiio, Tsuyoshi: *See*—
Miyashiro, Shigeyoshi; Kida, Takao; Shiio, Tsuyoshi; and Shibai, Hiroshiro, 4,642,335, Cl. 530-409.000.
Shiley, Inc.: *See*—
Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., 4,642,089, Cl. 604-4.000.
Shim-A-Line, Inc.: *See*—
Specktor, John; and Specktor, Gerald A., 4,641,853, Cl. 280-661.000.
Shimada, Toshikazu: *See*—
Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, 4,642,412, Cl. 136-244.000.
Shimano Industrial Company Limited: *See*—
Nagano, Masashi, 4,642,072, Cl. 474-82.000.
Shimazaki, Takeshi: *See*—
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.
Shimono, Mamoru: *See*—
Ishida, Takao; and Shimono, Mamoru, 4,641,947, Cl. 355-3.00R.
Shin Nisso Kako Cp., Ltd.: *See*—
Yahagi, Masakichi; Igaki, Tetsuo; Yosinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, 4,642,357, Cl. 549-226.000.
Shinkawa, Keiro: *See*—
Noda, Tsutomu; Shinkawa, Keiro; and Amada, Nobutaka, 4,642,573, Cl. 329-50.000.
Shinnenryoyu Kaihatsugijutsu Kenkyukumiai: *See*—
Inoi, Takeshi; Akabane, Toshiaki; Kurokawa, Yasuhiro; and Matsuoka, Shingo, 4,642,287, Cl. 435-99.000.
Shinoda, Nobuhiko: *See*—
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,641,942, Cl. 354-406.000.
Shirasaki, Masataka, to Fujitsu Limited. Polarizing element. 4,641,926, Cl. 350-394.000.
Shirasaki, Yuichi: *See*—
Asakawa, Kenichi; Shirasaki, Yuichi; and Iwamoto, Yoshinao, 4,641,915, Cl. 350-96.180.

Shirek, Frank A. Rock digging apparatus. 4,641,439, Cl. 37-2.00R.
Shirley, Ralph E., to Deere & Company. Vehicle accessory control system. 4,642,770, Cl. 364-424.000.
Shrier, Robert L.: *See—*
Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, 4,642,685, Cl. 358-84.000.
Shudo, Katsuyoshi: *See—*
Yamamoto, Masatoshi; Kawai, Yasushi; Shudo, Katsuyoshi; Kato, Hiroyuki; and Masuda, Shunsuke, 4,642,437, Cl. 219-84.000.
Sibilo, Gerard: *See—*
Bard, Max; Sibilo, Gerard; Marello, Georges; Viale, Daniel; and Louis, Michel, 4,641,985, Cl. 403-16.000.
Siemens Aktiengesellschaft: *See—*
Botvidsson, Lars, 4,641,664, Cl. 128-785.000.
Douklias, Nikolaos; and Grabmaier, Josef, 4,642,129, Cl. 65-3.120.
Fazekas, Peter, 4,642,566, Cl. 324-158.00R.
Fischer, Dietmar; and Kublick, Christian, 4,642,475, Cl. 307-66.000.
Hofmann, Ludwig, 4,642,574, Cl. 329-50.000.
Oestreich, Ulrich; and Mayr, Ernst, 4,641,916, Cl. 350-96.230.
Rogner, Ludwig, 4,642,416, Cl. 174-35.0GC.
Schonherr, Andreas, 4,642,546, Cl. 318-798.000.
Steffinger, Karl, 4,641,908, Cl. 339-206.00R.
Steffinger, Karl, 4,641,909, Cl. 339-210.00M.
Siemens Energy & Automation, Inc.: *See—*
Volkmar, Ralf R., 4,642,594, Cl. 335-227.000.
Siemens Medical Laboratories, Inc.: *See—*
Menor, George, 4,642,572, Cl. 328-228.000.
Sigma Design, Inc.: *See—*
Thomson, Robert, 4,642,780, Cl. 364-512.000.
Signor, Robert G. Line viewer. 4,641,444, Cl. 40-352.000.
Sih, Charles J. Process for preparing a compound for use in the production of L-carnitine. 4,642,290, Cl. 435-128.000.
Sihto, Reijo: *See—*
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.
Sikkenga, David L., to Amoco Corporation. Halided alumina catalyst. 4,642,301, Cl. 502-231.000.
Simkens, Marcellus C. P. L. Device for making ice cubes. 4,641,501, Cl. 62-188.000.
Simmons Universal Corporation: *See—*
Peters, Gerald; Hayton, Eugene P.; and Failor, Raymond A., 4,641,385, Cl. 5-82.00R.
Simpson, Andrew F.: *See—*
Hargreaves, Edward; and Simpson, Andrew F., 4,642,130, Cl. 65-60.100.
Sinclair, Stuart W., to Long Reach Manufacturing Co. Tubular slide lift truck attachment. 4,642,020, Cl. 414-621.000.
Sing, Peter. Fastening system. 4,641,433, Cl. 33-137.00R.
Siposs, George G. Left ventrical vacuum control and pressure relief valve. 4,642,097, Cl. 604-119.000.
Sittig, Roland: *See—*
Roggwiller, Peter; and Sittig, Roland, 4,642,669, Cl. 357-52.000.
Siwon, Hans: *See—*
Steinel, Heinrich W.; and Siwon, Hans, 4,642,158, Cl. 156-497.000.
Sjalander, Bo A., to JCC Johnson Construction Company AB. Method and equipment for rock drilling. 4,641,716, Cl. 175-62.000.
Skalatsky, Viktor K.: *See—*
Glushko, Mikhail F.; Skalatsky, Viktor K.; and Zakhryamin, Anatoly D., 4,641,492, Cl. 57-9.000.
Skandiafabriken AB: *See—*
Andreasson, Jan, 4,641,523, Cl. 73-313.000.
Skates, Raymond E., to Kansas City Rubber and Belting Company. Adjustable skirt holder for conveyor. 4,641,745, Cl. 198-836.000.
Skovmand, Timothy J.; and Mottola, Michael J., to National Semiconductor Corporation. Latching comparator with hysteresis. 4,642,484, Cl. 307-362.000.
Skuthan, Erich, to Karl M. Reich Maschinenfabrik GmbH. Anti-jamming nose plate for driving apparatus for fasteners. 4,641,772, Cl. 227-123.000.
Slater, Jack, to Cano International, N.V. Panel structure and building structure made therefrom. 4,641,468, Cl. 52-309.400.
Slautterback Corporation: *See—*
Faulkner, W. Harrison, III, 4,641,764, Cl. 222-146.200.
Sloan-Kettering Institute for Cancer Research: *See—*
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240.000.
Slough, Carlton M., to Texaco, Inc. Electrostatic field meter. 4,642,559, Cl. 324-72.000.
Smith, David F.; and Wilson, J. Pierre, to Altus Corporation. Moving piston seal activator. 4,642,275, Cl. 429-52.000.
Smith, David J. H.: *See—*
Alper, Howard; Smith, David J. H.; and Woell, James B., 4,642,370, Cl. 560-100.000.
Smith, Dennis M., to Hunter Engineering Co., Inc. Casting tip assembly with replaceable upstream and downstream units. 4,641,767, Cl. 222-591.000.
Smith, Eugene F.; and Nguyen, Tuan A., to Ball Corporation. Increased strength for metal beverage closure through reforming. 4,641,761, Cl. 220-66.000.
Smith International, Inc.: *See—*
Kar, Nareshchrandra J., 4,641,976, Cl. 384-95.000.
Smith, J. Harold, to International Fuel Cells Corporation. Apparatus for making composite sheets. 4,642,042, Cl. 425-364.00R.
Smith, James E.: *See—*
Stiller, Alfred H.; and Smith, James E., 4,641,611, Cl. 123-55.00A.
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., to Westinghouse Electric Corp. Method and apparatus for auto-calibration of signal conditioning electronics. 4,642,636, Cl. 340-870.040.
Smith, Peter R., to Industrial Trade Exchange, Inc. Fuel control system. 4,641,625, Cl. 123-575.000.
Smith, Rodney M.; and Masek, Jiri, to Valmet-Dominion Inc. Calender self-locking loading mechanism. 4,641,569, Cl. 92-43.000.
Smith, William N., III. Communications apparatus for handicapped individuals. 4,642,610, Cl. 340-365.00S.
Smits, Karel F. A. A., to Medtronic, Inc. Cardioversion and defibrillation lead method. 4,641,656, Cl. 128-419.00D.
Smrt, Thomas J. Spraying apparatus. 4,641,780, Cl. 239-150.000.
SMS Schloemann-Siemag AG: *See—*
Grothe, Horst, 4,641,785, Cl. 239-597.000.
SMT Machine Company AB: *See—*
Hallqvist, Ellert, 4,641,413, Cl. 29-568.000.
Smulders, Herman, to Advance Transformer Company. Compact igniter for discharge lamps. 4,642,521, Cl. 315-106.000.
SMW Schneider & Weisshaupt GmbH: *See—*
Hiestand, Karl, 4,641,414, Cl. 29-568.000.
Snaper, Alvin A. Remote meter reading system. 4,642,635, Cl. 379-107.000.
Snellman Wasenius, Kaija A.: *See—*
Andersson, Jan A. R.; Moren, Nils F. E.; Wetterlin, Kjell I. L.; Snellman Wasenius, Kaija A.; and Virtanen, Risto, 4,641,644, Cl. 128-200.230.
Snook, Matthew L.: *See—*
Groves, William A.; Snook, Matthew L.; and Browen, Rodney, 4,642,561, Cl. 324-73.00R.
Snyder, Richard H.: *See—*
Frazzell, Michael E.; and Snyder, Richard H., 4,642,057, Cl. 440-52.000.
Societa' Cavi Pirelli S.p.A.: *See—*
Lanfranconi, Gianmario; and Vecellio, Bernardino, 4,642,415, Cl. 174-22.00R.
Societa' Italiana Catene Calibrate Regina S.p.A.: *See—*
Ancarani Restelli, Amedeo, 4,642,073, Cl. 474-111.000.
Societa' Pneumatici Pirelli S.p.A.: *See—*
Semin, Fikret; Guermandi, Romano; and Cucco, Gian C., 4,641,696, Cl. 152-209.00R.
Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
Delesalle, Jacques, 4,641,613, Cl. 123-179.00H.
Societe Anonyme D.B.A.: *See—*
Kervagoret, Gilbert, 4,641,497, Cl. 60-563.000.
Lombardi, Michel; and Gerard, Jean-Louis, 4,641,730, Cl. 188-73.450.
Societe Anonyme: SABLA: *See—*
Roux, Marius, 4,641,858, Cl. 285-94.000.
Societe Auxiliaire de Manutention Acceleree de Denrees Alimentaires & Carrosserie Trouillet: *See—*
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.
Societe Europeenne des Produits Refractaires: *See—*
Recasens, Joseph, 4,641,589, Cl. 110-341.000.
Societe Francaise d'Equipements pour la Navigation Aeriene (S.F.E.N.A.): *See—*
Kerviel, Alain; and Barbarin, Remy, 4,642,496, Cl. 310-68.00B.
Societe Nationale des Poudres et Explosifs: *See—*
Ropars, Marcel; and Bloch, Bertrand, 4,642,264, Cl. 428-367.000.
Societe Nationale d'Etude et de Construction de Meteur d'Aviation (SNECMA): *See—*
Camboulives, Andre A. M. L., 4,641,783, Cl. 239-265.390.
Societe Nationale Industrielle Aerospatiale: *See—*
Matifas, Rene , 4,642,004, Cl. 409-136.000.
Soda, Yutaka: *See—*
Wakabayashi, Noboru; Akiyama, Katsuhiko; Soda, Yutaka; and Uchida, Hiroyuki, 4,642,716, Cl. 360-104.000.
Sodeno, Toshiaki; Yoshieda, Keiichi; and Honmoto, Syuichi, to Yoshida Kogyo K. K. Apparatus for finishing slide fastener chain with reinforcing strip. 4,641,424, Cl. 29-766.000.
Soeder, Edmund J.: *See—*
Ward, Thomas H.; Costanzo, Phillip A.; Pietrasz, Vincent; and Soeder, Edmund J., 4,642,516, Cl. 313-481.000.
Soga, Yoshinobu: *See—*
Sawada, Daisaku; Sugaya, Masami; Imai, Ryuji; and Soga, Yoshinobu, 4,642,069, Cl. 474-28.000.
Solco Basel AG: *See—*
Gunter, Mary, 4,642,088, Cl. 604-4.000.
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., to Becton, Dickinson and Company. Permanently bonded antithrombogenic polyurethane surface. 4,642,242, Cl. 427-2.000.
Solorzano, Armando N., to Xanar, Inc. Smoke evacuator system with electronic control circuitry. 4,642,128, Cl. 55-217.000.
Solvay & Cie, Societe Anonyme: *See—*
Goll, Werner, 4,642,249, Cl. 427-388.500.
Someya, Atsushi: *See—*
Matsuoka, Kazuhiko; Usui, Masayuki; Minoura, Kazuo; Baba, Takesi; and Someya, Atsushi, 4,641,920, Cl. 350-173.000.
Somlo, Tibor: *See—*
Davatz, Alexander; and Somlo, Tibor, 4,642,350, Cl. 548-260.000.
Sono-Tek Corporation: *See—*
Erickson, John J., 4,642,581, Cl. 331-154.000.

Sony Corporation: *See*—
Tamada, Hitoshi; Kaneko, Masahiko; Okamoto, Tsutomu; and Yamada, Toshiro, 4,642,795, Cl. 365-10.000.
Wakabayashi, Noboru; Akiyama, Katsuhiko; Soda, Yutaka; and Uchida, Hiroyuki, 4,642,716, Cl. 360-104.000.

Sorenson, Gary D.: *See*—
Janssen, Robert A.; and Sorenson, Gary D., 4,642,246, Cl. 427-127.000.

Spain, Ian L.: *See*—
Goldberg, Harris A.; Kalnin, Ilmar L.; Williams, Clyde C.; and Spain, Ian L., 4,642,664, Cl. 357-2.000.

Sparer, Steven J.; and Stephenson, Stanley W., to Eastman Kodak Company. Color-indexed dye frames in thermal printers. 4,642,655, Cl. 346-76.0PH.

Spaulding, Donald M.: *See*—
Kiser, David G.; Spaulding, Donald M.; and Wassmer, Peter J., 4,641,876, Cl. 294-86.400.

Specktor, Gerald A.: *See*—
Specktor, John; and Specktor, Gerald A., 4,641,853, Cl. 280-661.000.

Specktor, John; and Specktor, Gerald A., to Shim-A-Line, Inc. Method and structure for caster and camber adjustment. 4,641,853, Cl. 280-661.000.

Spector, Donald. Fabrics and garments formed thereby having thermally-sensitive chromatic properties. 4,642,250, Cl. 428-1.000.

Speich, Herrn H., to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co. Device for the connection of components and tensioning and/or control devices with belts. 4,641,875, Cl. 294-82.110.

Sperry Corporation: *See*—
Kral, Kevin D.; and Havenhill, Douglas D., 4,642,501, Cl. 310-90.500.
Penn, Cecil W., 4,642,529, Cl. 315-368.000.
Swartz, Harold L.; and Heidel, Jeffrey C., 4,642,555, Cl. 324-60.00C.

Spevak, Lev: *See*—
Lorenzi, Donald E.; Wagerer, Helmut F.; and Spevak, Lev, 4,641,529, Cl. 73-601.000.

Spisak, Anthony F., to Ex-Cell-O Corporation. Conveyor chain adjustment means. 4,641,744, Cl. 198-813.000.

Spivack, John D.; Pastor, Stephen D.; and Odorisio, Paul, to Ciba-Geigy Corporation. 1H-polyalkyl-phosphorinanes. 4,642,382, Cl. 568-12.000.

Spock, Wayne R.; and Urbanik, Peter J., to United Technologies Corporation. Control system actuator position synthesis for failure detection. 4,641,517, Cl. 73-116.000.

Spoganetz, Joseph C.: *See*—
Krawchuk, Myron; and Spoganetz, Joseph C., 4,641,774, Cl. 228-2.500.

Spurlock, Jay B. Closure insert for use in building construction. 4,641,479, Cl. 52-241.000.

Square D Company: *See*—
Noth, Myron A., 4,642,478, Cl. 307-118.000.

Srinivasan, Venugopal: *See*—
Halioua, Maurice; and Srinivasan, Venugopal, 4,641,972, Cl. 356-376.000.

Staats, James E.: *See*—
Fitzmayer, Louis H.; Staats, James E.; and Miller, Matthew S., 4,642,435, Cl. 219-10.55F.

Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive positive copying material with alkali soluble polycondensation binder. 4,642,282, Cl. 430-165.000.

Standard Telephones & Cables: *See*—
Magee, Terence E., 4,642,667, Cl. 357-35.000.

Stanley Electric Co. Ltd.: *See*—
Harmer, Alan L., 4,641,965, Cl. 356-135.000.
Masaru, Yasui, 4,642,208, Cl. 264-37.000.

Stanley, Louis, to Card-O-Matic Pty. Limited. Method of forming and installing field windings. 4,641,421, Cl. 29-596.000.

Starr, Thomas J. J.: *See*—
Beckner, Mark W.; and Starr, Thomas J. J., 4,642,630, Cl. 340-825.500.

State of Israel, Ministry of Defence, Israel Military Industries, The: *See*—
Zalmon, Seev W.; Engel, Shlomo; and Eyal, Joseph, 4,641,802, Cl. 244-3.280.

Stauffer Chemical Company: *See*—
Honig, Milton L.; and Weil, Edward D., 4,642,366, Cl. 558-138.000.

Steffee, Arthur D., to Laure Prosthetics, Inc. Toe implant. 4,642,122, Cl. 623-21.000.

Steffinger, Karl, to Siemens Aktiengesellschaft. Right-angled plug-type connector. 4,641,908, Cl. 339-206.00R.

Steffinger, Karl, to Siemens Aktiengesellschaft. Plug connector. 4,641,909, Cl. 339-210.00M.

Steigerwald, Robert L.; and Kornrumpf, William P., to General Electric Company. Power circuit with high input power factor and a regulated output. 4,642,745, Cl. 363-37.000.

Steinbeck, Karl: *See*—
Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.

Steinel GmbH & Co., K.G.: *See*—
Steinel, Heinrich W.; and Siwon, Hans, 4,642,158, Cl. 156-497.000.

Steinel, Heinrich W.; and Siwon, Hans, to Steinel GmbH & Co., K.G. Hot glue pistol. 4,642,158, Cl. 156-497.000.

Steiner, Robert E.; Cox, Karmen D.; Terpstra, Daniel A.; Metzger, James J., Jr.; and Plume, Steven H., to Emerson Electric Co. Electronically controlled power saw. 4,641,557, Cl. 83-71.000.

Stemmler, Kurt, to Winkler+Duennebier Maschinenfabrik+Eisengiesserei GmbH & Co. KG. Method and apparatus for securing elastic tapes to a material web. 4,642,150, Cl. 156-164.000.

Stephenson, Stanley W.: *See*—
Sparer, Steven J.; and Stephenson, Stanley W., 4,642,655, Cl. 346-76.0PH.

Sternberg, Ben K.; Dunster, Donald E.; and Honeycutt, Kenneth D., to Conoco Inc. Method and apparatus for complex resistivity measurements with elimination of electromagnetic coupling effects. 4,642,570, Cl. 324-366.000.

Stevance, Jean: *See*—
Funck, Ronald; and Stevance, Jean, 4,642,584, Cl. 333-17.00L.

Stevens, Gerald S., Jr.; Sapitowicz, Thomas P.; and Davis, Edward D., to General Instrument Corporation. Rotary drum non-impact printer. 4,642,660, Cl. 346-140.00R.

Stevens, Michael: *See*—
Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, 4,641,814, Cl. 254-10.500.

Stevens, Michael P.: *See*—
Wedgwood, Francis A.; Peck, Peter F.; and Stevens, Michael P., 4,642,687, Cl. 358-110.000.

Stewart Stamping Corp.: *See*—
Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., 4,641,901, Cl. 339-14.00R.

Steyr-Daimler-Puch AG: *See*—
Herdin, Gunther, 4,641,621, Cl. 123-446.000.

Stich, Roger L.; and Neal, William D. Automatic transmission adapter kit. 4,641,547, Cl. 74-606.00R.

Stiller, Alfred H.; and Smith, James E., to West Virginia University. Oscillatory motion apparatus. 4,641,611, Cl. 123-55.00A.

Stinson, Donald B.; and Orofino, Arthur A., to New Product, Inc. Apparatus for driving and retracting ground rods or the like. 4,641,715, Cl. 173-129.000.

Stocker, Wilhelm: *See*—
Muller, Erich; Gunter, Ruhle; and Stocker, Wilhelm, 4,641,734, Cl. 192-53.00F.

Stol, Israel, to Westinghouse Electric Corp. Shielding apparatus for metal processing operations. 4,642,445, Cl. 219-121.0FS.

Stolk, Richard D. Hot air balloon kite. 4,641,797, Cl. 244-153.00R.

Stone, Thomas W., to Universal Electric Company. Bearing system for fractional horsepower electric motors. 4,641,979, Cl. 384-146.000.

Storch, Leonard; and Hotto, Robert, to Leonard Storch Enterprises, Inc. Width card. 4,642,624, Cl. 340-735.000.

Stork Screens B.V.: *See*—
Meulen, Antonius M., 4,641,411, Cl. 29-424.000.

Storz, Karl. One-hand hysteroscope. 4,641,634, Cl. 128-4.000.

Stranco, Inc.: *See*—
Brazelton, Carl L., 4,642,222, Cl. 422-111.000.

Strassle, Marcel, to Syma Intercontinental AG. Clamping device for the separable connection of two profile section parts. 4,641,983, Cl. 403-12.000.

Streater, Richard W.: *See*—
Suthers, Mark S.; Este, Grantley O.; Streater, Richard W.; and MacLaurin, Blair K., 4,642,507, Cl. 310-313.00B.

Strebny, Hans-Gunther: *See*—
Groh, Reiner; Kotzsch, Hans-Joachim; Strebny, Hans-Gunther; and Vahlensieck, Hans-Joachim, 4,642,363, Cl. 556-471.000.

Striny, Kurt M., to AT&T Bell Laboratories. Chip carrier package. 4,642,670, Cl. 357-68.000.

Strobl, Gerhard: *See*—
Rasch, Klaus-Dieter; and Strobl, Gerhard, 4,642,414, Cl. 136-256.000.

Strock, Alvin E. Protective appliance for the hip joint area. 4,641,641, Cl. 128-132.00R.

Strom, Stephen A.; Schnuelle, Kenneth W.; and Potwora, William E., to National Semiconductor Corporation. Power line carrier communications system transformer bridge. 4,642,607, Cl. 340-310.00A.

Strommer, Kurt: *See*—
Braun, Hermann; Dumschat, Helmut; Strommer, Kurt; and Mueller, Sieghard, 4,641,515, Cl. 72-405.000.

Sturza, Mark A.; Knitter, Wayne L.; and Wu, Yi-Zen, to Litton Systems, Inc. Signal generator for radio navigation system. 4,642,647, Cl. 342-415.000.

Sueda, Tetsuo; and Yoshii, Minoru, to Canon Kabushiki Kaisha. Aberration measuring method. 4,641,962, Cl. 356-124.000.

Suehiro Seiko Kabushiki Kaisha: *See*—
Kume, Takeshi, 4,641,432, Cl. 30-383.000.

Sugai, Hiroshi: *See*—
Matsunaga, Ichiro; and Sugai, Hiroshi, 4,642,203, Cl. 252-631.000.

Sugawara, Tooru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, to Hitachi, Ltd. Humidity-sensitive element. 4,642,601, Cl. 338-35.000.

Sugaya, Masami: *See*—
Sawada, Daisaku; Sugaya, Masami; Imai, Ryuji; and Soga, Yoshinobu, 4,642,069, Cl. 474-28.000.

Sugimori, Shigeru; and Nigorikawa, Kazunori, to Chisso Corporation. Novel liquid crystal compounds and liquid crystal compositions containing same. 4,642,199, Cl. 252-299.610.

Sugiura, Hiroaki, to Yoshino Kogyosho Co., Ltd. Blow-molded bottle-shaped container of biaxially oriented thermoplastic synthetic resin with wide port and method of molding the same. 4,641,758, Cl. 215-1.00C.

Sugiura, Masamichi: *See*—
Takeda, Katsuhiko; and Sugiura, Masamichi, 4,641,957, Cl. 355-58.000.
Sukhman, Yefim P.: *See*—
Miller, Richard T.; Sukhman, Yefim P.; and Welker, Lynn C., 4,642,439, Cl. 219-121.0LN.
Sullivan, Donald K., to Outboard Marine Corporation. Hydraulic system for marine propulsion devices. 4,642,058, Cl. 440-61.000.
Sumitani, Shigeto: *See*—
Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.
Sumitomo Chemical Co., Limited: *See*—
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.
Sato, Hiroshi; Ishii, Norio; and Hirose, Kenichi, 4,642,409, Cl. 585-486.000.
Sumitomo Electric Industries, Ltd.: *See*—
Nishiwaki, Yoshikazu; and Nishiura, Yozo, 4,641,913, Cl. 350-96.110.
Yamazaki, Takashi; and Sakamoto, Katsuji, 4,641,794, Cl. 242-47.010.
Sumitomo Metal Industries, Ltd.: *See*—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.
Sumitomo Metal Mining Co., Ltd.: *See*—
Matsunaga, Ichiro; and Sugai, Hiroshi, 4,642,203, Cl. 252-631.000.
Sundstrand Corporation: *See*—
Gillingham, Gary D.; and Metcalf, Jeffrey D., 4,641,737, Cl. 192-141.000.
Hucker, David J., 4,642,535, Cl. 318-161.000.
Russ, David E., 4,641,544, Cl. 74-435.000.
Sundstrand Data Control, Inc.: *See*—
Cline, J. Douglas; Wilson, James A.; Feher, Stanley H.; and Ward, George D., 4,642,775, Cl. 364-443.000.
Sunpower, Inc.: *See*—
Redlich, Robert W., 4,642,547, Cl. 322-3.000.
Superior Electric Company, The: *See*—
Lundin, Robert S.; and Petritis, Demetris, 4,642,494, Cl. 310-49.00R.
Sustmann, Scarlet, to Vereinigte Papierwerke, Schickedanz & Co. Tampon for feminine hygiene and a process for its production. 4,642,108, Cl. 604-379.000.
Suthers, Mark S.; Este, Grantley O.; Streater, Richard W.; and MacLaurin, Blair K., to Northern Telecom Limited. Saw devices with reflection-suppressing fingers. 4,642,507, Cl. 310-313.00B.
Sutterlin, Philip H.: *See*—
Dumas, Gregory P.; and Sutterlin, Philip H., 4,642,805, Cl. 370-58.000.
Sutton, Gary, to General Signal Corporation; and Dempster Systems, Inc. Hydraulic control system and valve therefor. 4,642,019, Cl. 414-525.00R.
Suzuka, Susumu: *See*—
Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikkawa, Katsumasa, 4,642,663, Cl. 346-221.000.
Suzuki, Hitoshi; and Sato, Hiroaki, to Kabushiki Kaisha Toshiba. Piezoelectric resonating device. 4,642,508, Cl. 310-321.000.
Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Self-timer device for a camera. 4,641,937, Cl. 354-238.100.
Suzuki, Takashi, to Nittan Company, Limited. Light-scattering type smoke detector. 4,642,615, Cl. 340-630.000.
Suzuki, Toshimitsu: *See*—
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.
Suzuki, Toshio, to Toray Silicone Co., Ltd. Coating material for optical communication glass fibers and fibers made therefrom. 4,642,265, Cl. 428-375.000.
Suzuki, Toshiro; and Matsubara, Osamu, to Hitachi, Ltd. Stabilized current source circuit. 4,642,552, Cl. 323-315.000.
Suzuki, Tsuguya: *See*—
Kawaguchi, Takeshi; Suzuki, Tsuguya; and Shibata, Katsuhiro, 4,641,731, Cl. 188-218.0XL.
Svenson, Lars-Gote: *See*—
Nordqvist, Glenn O.; and Svenson, Lars-Gote, 4,642,453, Cl. 250-214.00A.
Swansen, James E., to United States of America, Energy. Fast counting electronics for neutron coincidence counting. 4,642,466, Cl. 250-392.000.
Swartz, Harold L.; and Heidel, Jeffrey C., to Sperry Corporation. Differential capacitance detector. 4,642,555, Cl. 324-60.00C.
Sweeny, Peter K. Apparatus for adjusting the plate segment of an off-set lithographic printer. 4,641,577, Cl. 101-415.100.
SWF Auto-Electric GmbH: *See*—
Egner-Walter, Bruno; Schmid, Eckhardt; and Scholl, Wolfgang, 4,641,389, Cl. 15-250.210.
Swift, Shirley F.: *See*—
Clements, Silous F.; Motola, Patrick D.; and Swift, Shirley F., 4,642,792, Cl. 364-900.000.
Syma Intercontinental AG: *See*—
Strassle, Marcel, 4,641,983, Cl. 403-12.000.
Syntex (U.S.A.) Inc.: *See*—
Chan, Tai W.; and Nguyen, Huong T., 4,642,346, Cl. 544-276.000.
Clark, Robin D.; and Waterbury, L. David, 4,642,378, Cl. 564-51.000.
Syracuse University: *See*—
Honig, Arnold, 4,642,206, Cl. 264-0.500.
Szonyi, Laszlo, to International Business Machines Corporation. System for automatically calibrating a robot. 4,642,781, Cl. 364-513.000.
Ta, An Tuan: *See*—
Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, 4,642,135, Cl. 420-33.000.
Taoata, Mitsuo; and Shibuya, Nobuo, to Kabushiki Kaisha Toshiba. Position detecting method for detecting the relative positions of the first and second members. 4,642,468, Cl. 250-548.000.
Tachida, Hiroki; Sato, Takane; and Sato, Shigeaki, to Nippon Gakki Seizo Kabushiki Kaisha. Upright piano. 4,641,565, Cl. 84-431.000.
Tachikawa Spring Co. Ltd.: *See*—
Miyashita, Norio; and Nemoto, Akira, 4,641,884, Cl. 297-284.000.
Tacken, Henricus T. J., to U.S. Philips Corporation. Semiconductor device having improved thermal characteristics. 4,642,668, Cl. 357-36.000.
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, to Nisshin Flour Milling Co., Ltd. Anti-ulcer compounds. 4,642,314, Cl. 514-475.000.
Taig, Alistair G., to Allied Corporation. Disabling device for a brake control device. 4,641,733, Cl. 192-13.00A.
Taiho Industrial Co., Ltd.: *See*—
Koyase, Hiroyasu; Funaki, Kinsaku; and Morita, Atsuo, 4,642,138, Cl. 134-22.180.
Taiho Kogyo Kabushiki Kaisha: *See*—
Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.
Takada, Kazuya: *See*—
Kuramoto, Nobuyuki; Takada, Kazuya; and Numata, Yoshihiko, 4,642,298, Cl. 501-96.000.
Takagi, Atsushi: *See*—
Nakahata, Kimio; Toyono, Tsutomu; Takagi, Atsushi; and Aguro, Yoshinori, 4,641,948, Cl. 355-3.0SH.
Takagi, Kunihiko: *See*—
Sakamoto, Izumi; and Takagi, Kunihiko, 4,642,104, Cl. 604-264.000.
Sakamoto, Izumi; and Takagi, Kunihiko, 4,642,111, Cl. 604-890.000.
Takagi, Shinichi: *See*—
Takano, Hiroshi; Takagi, Shinichi; and Wada, Kiyokazu, 4,642,080, Cl. 474-244.000.
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinor, to Dainippon Screen Mfg. Co., Ltd. Method and apparatus for electrophotographically reproducing a desired portion of an original on copying paper. 4,641,951, Cl. 355-7.000.
Takahara, Wataru: *See*—
Ikeda, Masaaki; Takahara, Wataru; Iteguchi, Junichi; Satoh, Hiroyuki; and Itoh, Shyuji, 4,642,732, Cl. 361-321.000.
Takahashi, Hiroshi; Narutomi, Yasuhisa; Aotani, Yoshimasa; and Shiba, Keisuke, to Fuji Photo Film Co., Ltd. Plate making processing for using negative working light-sensitive lithographic plate requiring no dampening solution. 4,642,283, Cl. 430-303.000.
Takahashi, Hisatsugu: *See*—
Hosokawa, Hidehiro; Iida, Yoshimichi; and Takahashi, Hisatsugu, 4,641,500, Cl. 62-70.000.
Takahashi, Ken; and Takahashi, Osamu, to Yokohama Rubber Co., Ltd, The. Pneumatic tire tread for heavy duty trucks. 4,641,697, Cl. 152-209.00R.
Takahashi, Koji; and Kawashima, Machio, to Hitachi, Ltd. In-line color picture tube apparatus with dynamic convergence correction device. 4,642,527, Cl. 315-368.000.
Takahashi, Mitsugu: *See*—
Yoshiyasu, Hajimu; Takahashi, Mitsugu; Hisatsune, Fumiyuki; and Murata, Shiro, 4,642,428, Cl. 200-144.00R.
Takahashi, Osamu: *See*—
Takahashi, Ken; and Takahashi, Osamu, 4,641,697, Cl. 152-209.00R.
Takahashi, Tomohiko: *See*—
Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, 4,642,659, Cl. 346-76.0PH.
Takahashi, Yoshiaki: *See*—
Yanai, Takao; and Takahashi, Yoshiaki, 4,642,760, Cl. 364-200.000.
Takanashi, Itsuo; Miyoshi, Tadayoshi; Nakagaki, Shintaro; and Nishiyama, Hiroshi, to Victor Company of Japan, Ltd. Color TV camera with plural solid state imaging devices mutually horizontally displaced and associated filters of vertically-oriented color stripes. 4,642,677, Cl. 358-43.000.
Takanashi, Masami; and Komatsu, Akihiro, to Honda Giken Kogyo Kabushiki Kaisha. Handle switch assembly for a motor vehicle. 4,641,723, Cl. 180-315.000.
Takano, Hiroshi; Takagi, Shinichi; and Wada, Kiyokazu, to Mitsuboshi Belting Ltd. Power transmission belt. 4,642,080, Cl. 474-244.000.
Takao, Shingo: *See*—
Ishiwatari, Takeo; Sasaki, Yasuchiyo; Misawa, Rokuro; and Takao, Shingo, 4,641,690, Cl. 141-4.000.
Takara Co., Ltd.: *See*—
Yoke, Hideaki, 4,642,064, Cl. 446-94.000.
Takasaki, Yoshimi: *See*—
Aagano, Toshitaka; and Takasaki, Yoshimi, 4,642,462, Cl. 250-327.200.
Takashima, Kohki: *See*—
Matsumoto, Kazuo; and Takashima, Kohki, 4,642,313, Cl. 514-374.000.

Takata, Yatsuka; Yamada, Tadamasa; and Kikuchi, Eiki, to Aichi Steel Works, Ltd.; and Koyo Seiko Kabushiki Kaisha. Bearing steel and method of manufacturing the same. 4,642,219, Cl. 420-104.000.

Takeda Chemical Industries, Ltd.: *See—*
Naito, Kenzo; Kato, Masayasu; and Tsukamura, Kazuo, 4,642,365, Cl. 558-83.000.

Takeda, Katsuhiko; and Sugiura, Masamichi, to Minolta Camera Kabushiki Kaisha. Optical member drive system for copying machine. 4,641,957, Cl. 355-58.000.

Takegahara, Takashi: *See—*
Kishi, Hajimu; Seki, Masaki; and Takegahara, Takashi, 4,642,754, Cl. 364-191.000.

Takenaka, Hirofumi: *See—*
Kishida, Hiroo; and Takenaka, Hirofumi, 4,641,816, Cl. 254-228.000.

Takenaka, Kenji: *See—*
Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.

Takenaka, Kiyoshi: *See—*
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinor, 4,641,951, Cl. 355-7.000.

Takeuchi, Seiji; and Anger, Byron H., to Don Fell Limited; and Donfab Investments, Inc. Inflatable bags. 4,641,760, Cl. 220-1.00B.

Talwar, Anil K.: *See—*
Peters, David; Denick, John, Jr.; and Talwar, Anil K., 4,642,231, Cl. 424-15.000.

Tamada, Hitoshi; Kaneko, Masahiko; Okamoto, Tsutomu; and Yamada, Toshiro, to Sony Corporation. Thermomagnetic recording system. 4,642,795, Cl. 365-10.000.

Tamada, Masuo, to Kabushiki Kaisha Toshiba. Mail sorting apparatus. 4,641,753, Cl. 209-546.000.

Tamada, Teruo: *See—*
Nakadai, Shigeru; and Tamada, Teruo, 4,642,596, Cl. 336-98.000.

Tamakoshi, Koichiro: *See—*
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.

Tamano, Yoshiziro: *See—*
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.

Tanabe, Kenjiro: *See—*
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinor, 4,641,951, Cl. 355-7.000.

Tanabe Seiyaku Co., Ltd.: *See—*
Matsumoto, Kazuo; and Takashima, Kohki, 4,642,313, Cl. 514-374.000.

Tanaka, Isao: *See—*
Yasumura, Takashi; Koishi, Toshio; and Tanaka, Isao, 4,642,326, Cl. 525-153.000.

Tanaka, Makoto: *See—*
Okuda, Kazuhiro; Tanaka, Makoto; and Kuramitsu, Wataru, 4,641,830, Cl. 271-274.000.

Tanaka, Shuichi: *See—*
Nagano, Jun; and Tanaka, Shuichi, 4,642,686, Cl. 358-107.000.

Tanaka, Takashi: *See—*
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.

Tanaka, Yoshimichi, to Mazda Motor Corporation. Cylinder head for DOHC engine. 4,641,609, Cl. 123-41.82R.

Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, to Minolta Camera Kabushiki Kaisha. Photosensitive member with an insulating layer of amorphous silicon. 4,642,278, Cl. 430-66.000.

Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, to Minolta Camera Kabushiki Kaisha. Photosensitive member with an insulating layer of amorphous silicon. 4,642,279, Cl. 430-66.000.

Tapp, Michael R.: *See—*
Buckman, William C.; and Tapp, Michael R., 4,642,028, Cl. 416-95.000.

Tarassoff, Serge, to Pomagalski, S.A. Terminal for a detachable grip chairlift for gondola lift. 4,641,585, Cl. 104-173.200.

Targa Electronics Systems Inc.: *See—*
Foster, William R., 4,642,759, Cl. 364-200.000.

Tarvin, Jeffrey A., to KMS Fusion, Inc. Optical humidity sensor. 4,641,524, Cl. 73-335.000.

Taub, Alan I.; Huang, Shyh-Chin; and Chang, Keh-Minn, to General Electric Company. Rapidly solidified nickel aluminide of improved stoichiometry and ductilization and method. 4,642,139, Cl. 148-3.000.

Taurand, Gerard: *See—*
Cotrel, Claude; Guyon, Claude; Roussel, Gerard; and Taurand, Gerard, 4,642,308, Cl. 514-253.000.

Tausevich, Edward R. Concealed inventory control device. 4,641,447, Cl. 40-530.000.

Tawse, Alan I.: *See—*
Christian, Philip; and Tawse, Alan I., 4,641,689, Cl. 140-149.000.

Tayebi, Amad, to New England Thermoplastics, Inc. Face mask. 4,641,645, Cl. 128-206.190.

Taylor, Anne K.: *See—*
Fawzi, Mahdi B.; and Taylor, Anne K., 4,642,316, Cl. 514-398.000.

Taylor, Kenneth J.: *See—*
Clark, Michael; and Taylor, Kenneth J., 4,641,817, Cl. 267-140.100.

Taylor, Sheryl L.: *See—*
Behan, Diane E., 4,641,647, Cl. 128-207.180.

Taylor-Winfield Corporation, The: *See—*
Mullane, William E.; and Lund, David, 4,642,442, Cl. 219-10.410.

Tazawa, Hiroaki: *See—*
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.

TDK Corporation: *See—*
Ikeda, Masaaki; Takahara, Wataru; Iteguchi, Junichi; Satoh, Hiroyuki; and Itoh, Shyuji, 4,642,732, Cl. 361-321.000.
Imai, Yuji, 4,642,168, Cl. 204-129.650.
Morita, Haruyuki; Yoshinari, Jiro; and Fukuda, Kazumasa, 4,642,270, Cl. 428-621.000.

Tecumseh Products Company: *See—*
Farr, James B., 4,642,031, Cl. 417-223.000.

Tedesco, Robert J., to Westinghouse Electric Corp. Molded case circuit breaker with an improved contoured cradle. 4,642,430, Cl. 200-153.00G.

Tedesco, Robert J.; and Haggerty, David L., to Westinghouse Electric Corp. Molded case circuit breaker with a movable electrical contact positioned by a camming spring loaded clip. 4,642,431, Cl. 200-153.00G.

Tegman, Ragnar: *See—*
Burstrom, Martin; and Tegman, Ragnar, 4,642,204, Cl. 252-633.000.

Tektronix, Inc.: *See—*
Beeck, Carlos L., 4,642,592, Cl. 333-246.000.
Thomas, Wayne D., 4,642,744, Cl. 363-21.000.

Teleflex Incorporated: *See—*
McBeth, James, 4,642,032, Cl. 417-269.000.

Telefonaktiebolaget LM Ericsson: *See—*
Nordqvist, Glenn O.; and Svenson, Lars-Gote, 4,642,453, Cl. 250-214.00A.

Telefunken electronic GmbH: *See—*
Beneking, Heinz, 4,641,921, Cl. 350-320.000.
Rasch, Klaus-Dieter; and Strobl, Gerhard, 4,642,414, Cl. 136-256.000.

Telnetix, Inc.: *See—*
Japngie, Leonard A., 4,641,900, Cl. 339-17.0LC.

Temkin, Gregg A.: *See—*
Hebel, Gregory F.; and Temkin, Gregg A., 4,641,754, Cl. 211-26.000.

Temple, Davis L., Jr., to Mead Johnson & Company. 6,7-dihydro-3H-imidazo[1,2-a]-purine-9(4H)-ones. 4,642,345, Cl. 544-251.000.

Ten Angel, Salvador. Folding roof rack for cars. 4,641,769, Cl. 224-314.000.

Tencor Instruments: *See—*
Pecen, Jiri, 4,641,967, Cl. 356-237.000.

Teng, Albert Y., to AT&T Bell Laboratories. File transfer scheduling arrangement. 4,642,758, Cl. 364-200.000.

Terashita, Takaaki, to Fuji Photo Film Co., Ltd. Method for determining exposure amount in photographic printing. 4,641,959, Cl. 355-77.000.

Terauchi, Kiyoshi, to Sanden Corporation. Scroll type compressor with displacement adjusting mechanism. 4,642,034, Cl. 417-295.000.

Terhorst, Bruce R.: *See—*
Matsko, Joseph J.; Grunert, Kurt A.; and Terhorst, Bruce R., 4,642,726, Cl. 361-198.000.

Terhune, Robert D.: *See—*
Funk, Gary L.; Terhune, Robert D.; Kania, Cheryl C.; and Kallenberger, Robert H., 4,642,766, Cl. 364-402.000.

Terpstra, Daniel A.: *See—*
Steiner, Robert E.; Cox, Karmen D.; Terpstra, Daniel A.; Metzger, James J., Jr.; and Plume, Steven H., 4,641,557, Cl. 83-71.000.

Terry, Ruel C. Terminating persistent underground coal fires. 4,641,711, Cl. 169-44.000.

Terry, Steve: *See—*
McEachern, Alexander; and Terry, Steve, 4,642,563, Cl. 324-111.000.

Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,642,372, Cl. 560-124.000.

Tetra-Dev Co.: *See—*
Zannoni, Eros, 4,641,486, Cl. 53-433.000.

Tetra Pak International Aktiebolag: *See—*
Brosten, Goran, 4,641,481, Cl. 53-128.000.

Texaco Inc.: *See—*
Livingston, David R., 4,642,380, Cl. 564-206.000.
McDaniel, Kenneth G., 4,642,319, Cl. 521-175.000.
Renken, Terry L., 4,642,303, Cl. 502-315.000.
Slough, Carlton M., 4,642,559, Cl. 324-72.000.

Texan Nut Sheller Pecan Company: *See—*
Hahn, Marlin D., 4,641,430, Cl. 30-120.500.

Texas Instruments Incorporated: *See—*
McDavid, James M., 4,641,417, Cl. 29-571.000.
Scott, Bentley N., 4,642,580, Cl. 331-117.00D.
Vilimek, Vaclav F., 4,641,539, Cl. 73-862.670.
White, Lionel S., Jr.; and Zivitz, Maury, 4,642,784, Cl. 364-551.000.

Th. Goldschmidt AG: *See—*
Langner, Jaroslav; and Weitemeyer, Christian, 4,642,356, Cl. 549-214.000.

Thalmann, Alfred; Lehmann, Ernesto; Roth, Emil; and Gerber, Walter, to Georg Fischer Aktiengesellschaft. Method and apparatus for welding conduits. 4,642,154, Cl. 156-272.200.

Theeuwes, Felix: *See—*
Urquhart, John; and Theeuwes, Felix, 4,642,233, Cl. 424-19.000.

Theisen, Peter J.: *See—*
Bielinski, Ralph F.; Jaeschke, James R.; Krstic, Slobodan; Piber, Earl T.; and Theisen, Peter J., 4,642,481, Cl. 307-252.0UA.

Theriault, David G.: *See—*
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Thetford Corporation: *See—*
Sargent, Charles L.; Antos, John M.; Hoffman, John A.; and Cameron, John T., 4,641,383, Cl. 4-323.000.

Thomalla, Johannes: *See—*
Grecksch, Hans; Schwalm, Hans-Werner; and Thomalla, Johannes, 4,641,740, Cl. 198-487.100.

Thomarat, Marc: *See—*
Cheminal, Bernard; Mathais, Henri; and Thomarat, Marc, 4,642,386, Cl. 568-405.000.

Thomas, Charles E.; and Harvey, Richard. Speed maneuvering water craft and controls. 4,641,599, Cl. 114-346.000.

Thomas, Charles E.; Lee, Minyoung; Bedard, James F.; and Hayashi, Steven R., to General Electric Company. Acoustic tool break detection system and method. 4,642,617, Cl. 340-680.000.

Thomas, Gunter: *See—*
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,642,310, Cl. 514-301.000.

Thomas, Jacob E.: *See—*
Packard, Roger E.; and Thomas, Jacob E., 4,642,785, Cl. 364-557.000.

Thomas, Ronald G.: *See—*
Glesmann, Herbert C.; and Thomas, Ronald G., 4,642,604, Cl. 340-60.000.

Thomas, Wayne D., to Tektronix, Inc. Regulated high voltage supply. 4,642,744, Cl. 363-21.000.

Thompson, Phillip D. Solenoid operated valve pressure balanced in a closed position by a single diaphragm. 4,641,686, Cl. 137-625.650.

Thompson, Timothy F.: *See—*
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Thoms, William H. Intelligent radiation monitor. 4,642,463, Cl. 250-336.100.

Thomson-CSF: *See—*
Funck, Ronald; and Stevance, Jean, 4,642,584, Cl. 333-17.00L.
Perny, Didier, 4,642,801, Cl. 367-88.000.

Thomson, Robert, to Sigma Design, Inc. Space planning/facilities management system using priority and affinity colors. 4,642,780, Cl. 364-512.000.

Thyssen Industrie AG: *See—*
Miller, Luitpold; and Raschbichler, Hans-Georg, 4,641,586, Cl. 104-284.000.

Tidstam, Goran: *See—*
Lundberg, Krister; Tidstam, Goran; and Pope, Daniel F., 4,641,969, Cl. 356-343.000.

Tiedje, Thomas J.; and Abeles, Benjamin, to Exxon Research and Engineering Company. Proximity doping of amorphous semiconductors. 4,642,144, Cl. 148-175.000.

Ting, Sai-Pei: *See—*
Aycock, David F.; and Ting, Sai-Pei, 4,642,358, Cl. 549-245.000.

Toacosei Chemical Industry Co., Ltd.: *See—*
Uramoto, Yoshihito; Kaneko, Takasi; and Hirose, Toshiro, 4,642,011, Cl. 411-258.000.

Toba, Ritsuji: *See—*
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.

Tobita, Michiaki: *See—*
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.

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Toganoh, Shigeo: *See—*
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.

Togashi, Seigo, to Citizen Watch Co., Ltd. Non-light-emitting liquid crystal color display device. 4,642,619, Cl. 340-701.000.

Togashi, Seigo; and Sekiguchi, Kanetaka, to Citizen Watch Company Limited. Matrix display device. 4,642,620, Cl. 340-713.000.

Toko, Inc.: *See—*
Nakadai, Shigeru; and Tamada, Teruo, 4,642,596, Cl. 336-98.000.

Tokuhara, Mitsuhiro: *See—*
Honda, Haruhisa; Tsuchiya, Hiroaki; Setani, Michitaka; and Tokuhara, Mitsuhiro, 4,641,944, Cl. 355-1.000.

Tokuyama Soda Kabushiki Kaisha: *See—*
Kuramoto, Nobuyuki; Takada, Kazuya; and Numata, Yoshihiko, 4,642,298, Cl. 501-96.000.

Tokyo Institute of Technology: *See—*
Minami, Kazuo; and Awano, Mitsuru, 4,642,571, Cl. 328-59.000.

Tokyo Juki Industrial Co., Ltd.: *See—*
Okuda, Kazuhiro; Tanaka, Makoto; and Kuramitsu, Wataru, 4,641,830, Cl. 271-274.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ishida, Takao; and Shimono, Mamoru, 4,641,947, Cl. 355-3.00R.
Miyamoto, Junichi; and Iizuka, Tetsuya, 4,642,673, Cl. 357-23.500.
Nakamura, Yoshiaki, 4,642,186, Cl. 210-257.100.
Sakamoto, Tsutomu, 4,642,757, Cl. 364-200.000.

Tomase, Joseph P.: *See—*
Chason, Marc K.; Tomase, Joseph P.; and Onystok, Michael J., 4,642,511, Cl. 310-348.000.

Tomasi, Jean-Pierre, to U.S. Philips Corporation. Digital-to-analogue converter arrangement. 4,642,608, Cl. 340-347.0DA.

Tomioka, Hiroyuki: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; and Tomioka, Hiroyuki, 4,642,145, Cl. 148-336.000.

Tomita, Hiroo, to Fuji Electric Company Ltd. Reverse bias current supply system for a switching device. 4,642,483, Cl. 307-300.000.

Tomita, Norizou: *See—*
Masuzawa, Tokihiko; Kageyama, Yoshitaka; and Tomita, Norizou, 4,642,736, Cl. 362-31.000.

Tomita, Toshio: *See—*
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, 4,642,307, Cl. 514-252.000.

Tomosada, Masahiro: *See—*
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.

Tonomura, Akira: *See—*
Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.

Toppan Printing Co., Ltd.: *See—*
Igarashi, Makoto; Okano, Kiichiro; and Kumagami, Naoki, 4,641,742, Cl. 198-627.000.

Toray Silicone Co., Ltd.: *See—*
Suzuki, Toshio, 4,642,265, Cl. 428-375.000.

Torii, Takahiro; Ishiguro, Mamoru; and Senoh, Hideaki, to Mitsubishi Paper Mills, Ltd. Carbonless paper for use in letter printers. 4,642,662, Cl. 346-215.000.

Tornstrom, Paul K.: *See—*
Hale, Ronald G.; Woodley, Thomas R.; and Tornstrom, Paul K., 4,642,200, Cl. 252-400.540.

Toseland, Bernard A.: *See—*
Carr, Richard V. C.; Toseland, Bernard A.; and Ross, David S., 4,642,396, Cl. 568-934.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Miyazaki, Yoshihiko; Goto, Taizan; Komiyama, Yoshizo; and Iwata, Kotei, 4,641,603, Cl. 118-724.000.

Toter, Kimberly A. M. Gastric drainage system. 4,642,105, Cl. 604-323.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Kikuchi, Makoto, 4,642,021, Cl. 414-735.000.

Toyono, Tsutomu: *See—*
Nakahata, Kimio; Toyono, Tsutomu; Takagi, Atsushi; and Aguro, Yoshinori, 4,641,948, Cl. 355-3.0SH.

Toyota Jidosha Kabushiki Kaisha: *See—*
Izumi, Toshio, 4,641,855, Cl. 280-716.000.
Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.
Nomura, Kazuhiro; and Nomura, Masayuki, 4,641,881, Cl. 296-202.000.
Osanai, Akinori; and Niwa, Takao, 4,642,068, Cl. 474-11.000.
Sawada, Daisaku; Sugaya, Masami; Imai, Ryuji; and Soga, Yoshinobu, 4,642,069, Cl. 474-28.000.

Tozzolino, Pierre: *See—*
Rosa, Jean; Castaigne, Jean-Paul; Demarne, Henri; and Tozzolino, Pierre, 4,642,306, Cl. 514-222.000.

Trailmobile Inc.: *See—*
Ehrhart, Leonard M., 4,641,846, Cl. 280-80.00B.

Transparent Packaging Corp.: *See—*
Howarth, Robert A., Jr., 4,642,086, Cl. 493-341.000.

Transparent Paper PLC: *See—*
Ferrar, Andrew N.; and Jones, Arthur N., 4,642,239, Cl. 426-396.000.

Traverso, Carlo: *See—*
Cianci, Giuseppe; and Traverso, Carlo, 4,641,984, Cl. 403-14.000.

Treiber, Jurgen: *See—*
Maisch, Wolfgang; and Treiber, Jurgen, 4,642,602, Cl. 338-162.000.

Trethewey, Reginald, to Comdox No. Pty. Ltd. Exercise machine. 4,641,833, Cl. 272-72.000.

Trezza, Ronald F. Clip construction for wall arrangement. 4,641,473, Cl. 52-410.000.

Trident Engineering, Inc.: *See—*
Kapland, Mitchell A.; Norikane, Kiyoshi; and London, Jack W., 4,641,449, Cl. 42-65.000.

Tripp, Edwin P., III; Weisman, Jason; and Hissong, George, to Energy Sciences Inc. Method of and apparatus for electron beam curing coated, porous and other web structures. 4,642,244, Cl. 427-44.000.

Triquint Semiconductors, Inc.: *See—*
Vetanen, William A.; Gleason, Kimberly R.; and Beers, Irene G., 4,642,259, Cl. 428-137.000.

Trouillet, Andre: *See—*
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.

True, Thomas T., to General Electric Company. Constant magnification light collection system. 4,642,740, Cl. 362-268.000.

Trumpp, Hans J.: *See—*
Greschner, Johann; Schwerdt, Friedrich W.; and Trumpp, Hans J., 4,642,163, Cl. 156-643.000.

TRW Inc.: *See—*
Burk, Maksymilian; and Blumenthal, Jack L., 4,642,125, Cl. 48-197.00R.

TRW Probe Electronics Co. Ltd.: *See—*
Harbour, John, 4,641,719, Cl. 177-136.000.

Tsuchitani, Shigeki: *See—*
Sugawara, Tooru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, 4,642,601, Cl. 338-35.000.

Tsuchiya, Hiroaki: *See—*
Honda, Haruhisa; Tsuchiya, Hiroaki; Setani, Michitaka; and Tokuhara, Mitsuhiro, 4,641,944, Cl. 355-1.000.

Tsuchiya, Kazuo: *See—*
Wakita, Kazuto; Tsuchiya, Kazuo; Nagayasu, Isao; and Emoto, Ikuo, 4,642,260, Cl. 428-215.000.

Tsuchiya, Yasuyuki: *See—*
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,642,325, Cl. 525-65.000.

Tsuda, Yoshiaki: *See—*
Nakamura, Shizuo; Inoue, Makoto; and Tsuda, Yoshiaki, 4,642,355, Cl. 548-533.000.

Tsui, Gary; and Heimbigner, Thomas, to CBC Industries, Inc. Multiposition eyebolt. 4,641,986, Cl. 403-164.000.

Tsujioka, Shigeo: *See—*
Tsunehiro, Takashi; and Tsujioka, Shigeo, 4,642,625, Cl. 340-747.000.

Tsukamura, Kazuo: *See—*
Naito, Kenzo; Kato, Masayasu; and Tsukamura, Kazuo, 4,642,365, Cl. 558-83.000.

Tsumaki, Koji: *See—*
Izumi, Shigeru; Senoh, Makoto; Tsumaki, Koji; and Miyata, Kenji, 4,641,526, Cl. 73-572.000.

Tsunehiro, Takashi; and Tsujioka, Shigeo, to Hitachi, Ltd. Graphic processor for color and positional data of an image to be displayed. 4,642,625, Cl. 340-747.000.

Tsunekawa, Tokuichi; Sato, Yuichi; Kawabata, Takashi; and Matsumura, Susumu, to Canon Kabushiki Kaisha. Distance measuring device with various controls of the light emitting means. 4,642,451, Cl. 250-201.000.

Tsutsumi, Kazumichi, to Mitsubishi Denki Kabushiki Kaisha. Exhaust gas recirculation control method and apparatus for internal combustion engine. 4,641,624, Cl. 123-571.000.

Tsutsumi, Masaru; Hagino, Hideo; Fujiwara, Osamu; and Goto, Hitoshi, to Sanyo Electric Co., Ltd. Fuel cell system. 4,642,274, Cl. 429-35.000.

Tsuyama Mfg. Co., Ltd.: *See—*
Tsuyama, Sadaharu, 4,642,606, Cl. 340-134.000.

Tsuyama, Sadaharu, to Tsuyama Mfg. Co., Ltd. Data display unit for a bicycle. 4,642,606, Cl. 340-134.000.

Tudor, Thomas T.: *See—*
Lewis, Robert T.; and Tudor, Thomas T., 4,641,748, Cl. 206-263.000.

Turner, Arthur A. Roller-ball structure. 4,641,839, Cl. 273-128.00A.

Turner, John T.; and Christodoulou, Marios, to Victoria University of Manchester, The. Device for recovering oil floating on water. 4,642,185, Cl. 210-242.300.

Turner, Robert B.; Peffley, Richard D.; and Vanderhider, James A., to Dow Chemical Company, The. Reaction injection molded polyureas employing high molecular weight amine-terminated polyethers. 4,642,320, Cl. 521-176.000.

Turney, Anthony W.: *See—*
Hughes, Richard L.; Turney, Anthony W.; and Look, Raymond J., 4,642,480, Cl. 307-147.000.

Tynkkynen, Pertti: *See—*
Wallgren, Matti; and Tynkkynen, Pertti, 4,641,824, Cl. 270-31.000.

Tzen, Ching B.; and Liang, Tzu P. Ruler. 4,641,436, Cl. 33-483.000.

Ube Industries, Ltd.: *See—*
Wakita, Kazuto; Tsuchiya, Kazuo; Nagayasu, Isao; and Emoto, Ikuo, 4,642,260, Cl. 428-215.000.

Uchida, Hiroyuki: *See—*
Wakabayashi, Noboru; Akiyama, Katsuhiko; Soda, Yutaka; and Uchida, Hiroyuki, 4,642,716, Cl. 360-104.000.

Uda, Masahiro; Ohno, Satoru; and Okuyama, Hideo, to National Research Institute for Metals. Process for producing ultrafine particles of ceramics. 4,642,207, Cl. 264-10.000.

Ueda, Akinori; and Okamoto, Kouichi, to Mitsubishi Denki Kabushiki Kaisha. Rotor for a superconducting rotating electric machine. 4,642,503, Cl. 310-214.000.

Ueda, Hideaki, to Minolta Camera Kabushiki Kaisha. Electrophotographic photoreceptors containing hydrazone compounds as charge-transfer agents. 4,642,280, Cl. 430-73.000.

Ueyama, Tsutomu: *See—*
Maeda, Kiyoshi; and Ueyama, Tsutomu, 4,642,701, Cl. 358-296.000.

Uggeri, Fulvio: *See—*
Giordano, Claudio; Uggeri, Fulvio; and Minisci, Francesco, 4,642,376, Cl. 562-466.000.

Umeda, Takato, to Exploration Logging, Inc. Noise subtraction filter. 4,642,800, Cl. 367-85.000.

Umezu, Takao; Ishiguro, Minoru; and Nishizawa, Tetsuo, to Fuji Photo Optical Co., Ltd. Camera. 4,641,935, Cl. 354-173.110.

Unaform Inc.: *See—*
Fearnhead, Ivan J., 4,642,261, Cl. 428-225.000.

Unger, Burton A., to AT&T Bell Laboratories. Suppression of electrostatic charge buildup at a workplace. 4,642,728, Cl. 361-213.000.

Union Carbide Corporation: *See—*
Ward, Thomas H.; Costanzo, Phillip A.; Pietrasz, Vincent; and Soeder, Edmund J., 4,642,516, Cl. 313-481.000.

Union Oil Company of California: *See—*
Mester, Zoltan C.; and Aitken, Edward J., 4,642,177, Cl. 208-113.000.

Uniroyal Chemical Company, Inc.: *See—*
Loveless, Frederick C., 4,642,410, Cl. 585-524.000.

Uniroyal Englebert Reifen GmbH: *See—*
Poque, Dionysius J.; and Zinnen, Norbert, 4,641,670, Cl. 152-158.000.

United Kingdom Atomic Energy Authority: *See—*
Wedgwood, Francis A.; Peck, Peter F.; and Stevens, Michael P., 4,642,687, Cl. 358-110.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Lewis, Meirion F., 4,642,506, Cl. 310-313.00D.

United States of America
Air Force: *See—*
Haupt, Randy L., 4,642,645, Cl. 342-379.000.
Wise, Carl D.; and Hays, Frank W., 4,642,643, Cl. 342-14.000.
Wise, Carl D.; Hays, Frank W.; and Lisle, Thomas K., Jr., 4,642,644, Cl. 342-14.000.
Army: *See—*
Kuhn, Donald H., 4,642,651, Cl. 343-754.000.
Energy: *See—*
Honig, Emanuel M., 4,642,476, Cl. 307-108.000.
Kapich, Davorin D., 4,641,978, Cl. 384-102.000.
Mao, Nai-Hsien, 4,641,520, Cl. 73-151.000.
Noufi, Rommel; and Chen, Yih-Wen, 4,642,140, Cl. 148-6.240.
Swansen, James E., 4,642,466, Cl. 250-392.000.
National Aeronautics and Space Administration: *See—*
Jones, Jack A., 4,641,499, Cl. 62-48.000.
Nakanishi, Shigeo; Calco, Frank S.; and Scarpelli, August R., 4,642,523, Cl. 315-111.810.
Navy: *See—*
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Lin, Tung Y., 4,642,000, Cl. 405-221.000.
Oliver, Jim; and Watson, Pat, 4,641,755, Cl. 211-60.100.
Rice, Roy W., 4,642,218, Cl. 419-11.000.
Rice, Roy W., 4,642,271, Cl. 428-698.000.

U.S. Philips Corporation: *See—*
Baggen, Constant P. M. J., 4,642,808, Cl. 371-39.000.
Bates, Robert N., 4,642,577, Cl. 331-47.000.
Bouman, Anton J.; and Geertsema, Eise B., 4,642,520, Cl. 315-73.000.
Braat, Josephus J. M., 4,641,929, Cl. 350-432.000.
Bryant, Stewart F., 4,642,473, Cl. 307-38.000.
Buijs, Johannes H., 4,642,590, Cl. 333-218.000.
Cornelissen, Bernardus H. J.; and Wulms, Henricus E. J., 4,642,485, Cl. 307-443.000.
Demmer, Walter H., 4,642,689, Cl. 358-166.000.
Dureux, Pierre J. C., 4,642,623, Cl. 340-728.000.
Easthill, Stephen P., 4,642,753, Cl. 364-184.000.
Kahlman, Josephus A. H. M.; and Hoogendijk, Adrianus H., 4,642,702, Cl. 358-322.000.
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Losel, Walter, 4,642,746, Cl. 363-49.000.
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Schoofs, Franciscus A. C. M., 4,642,674, Cl. 357-23.800.
Tacken, Henricus T. J., 4,642,668, Cl. 357-36.000.
Tomasi, Jean-Pierre, 4,642,608, Cl. 340-347.0DA.
Vollmann, Norbert; and Mader, Leopold, 4,642,706, Cl. 360-74.300.

United Technologies Corporation: *See—*
Spock, Wayne R.; and Urbanik, Peter J., 4,641,517, Cl. 73-116.000.
Weidner, Robert H., 4,642,024, Cl. 415-116.000.

Unitika Ltd.: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; and Tomioka, Hiroyuki, 4,642,145, Cl. 148-336.000.
Sakamoto, Izumi; and Takagi, Kunihiko, 4,642,104, Cl. 604-264.000.
Sakamoto, Izumi; and Takagi, Kunihiko, 4,642,111, Cl. 604-890.000.

Univ. of Virginia Alumni Patents Found.: *See—*
Batchman, Theodore E.; and Gimpelson, George E., 4,642,558, Cl. 324-72.500.

Universal Electric Company: *See—*
Stone, Thomas W., 4,641,979, Cl. 384-146.000.

Universal-Rundle Corporation: *See—*
Rudelick, John, 4,641,685, Cl. 137-625.310.

University of Bath: *See—*
Davies, David J. G.; Meakin, Brian J.; and Rees, John E., 4,642,234, Cl. 424-78.000.

University of Iowa Research Foundation: *See—*
Yoshisato, Randall A.; Datta, Ravindra; and Carmichael, Gregory R., 4,642,169, Cl. 204-180.100.

University of Pittsburgh: *See—*
Chung, Albert E., 4,642,293, Cl. 435-240.000.

University Patents, Inc.: *See—*
Ellis, Donald G., 4,641,657, Cl. 128-630.000.

Uniweld Inc.: *See—*
Hooper, Anthony W.; Cormack, Alexander D.; and Marchand, Pierre, 4,642,015, Cl. 414-325.000.
Hooper, Anthony W., 4,642,189, Cl. 210-405.000.

Uno, Eiichi: *See—*
Morino, Seiji; Uno, Eiichi; and Yoshitani, Yoshihiro, 4,641,626, Cl. 123-620.000.

UOP Inc.: *See—*
Jensen, Robert H., 4,642,402, Cl. 585-411.000.
Schmidt, Robert J., 4,642,406, Cl. 585-477.000.
Zinnen, Hermann A.; and Franczyk, Thad S., 4,642,397, Cl. 568-934.000.

Uramoto, Yoshihito; Kaneko, Takasi; and Hirose, Toshiro, to Toacosei Chemical Industry Co., Ltd. Composition for rust prevention of metals and threaded metal elements with a rustproof film. 4,642,011, Cl. 411-258.000.

Urban Transportation Development Corporation Ltd.: *See—*
Wallace, Allen K., 4,642,493, Cl. 310-13.000.

Urbanik, Peter J.: *See—*
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Uriuhara, Makoto: *See—*
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Uriuhara, Makoto, 4,642,771, Cl. 364-424.100.

Urquhart, John; and Theeuwes, Felix, to Alza Corporation. Gastrointestinal drug delivery system comprising a hydrogel reservoir containing a plurality of tiny pills. 4,642,233, Cl. 424-19.000.

USS Engineers and Consultants, Inc.: *See—*
Hill, Paul L., 4,641,768, Cl. 222-590.000.

Usui, Masayuki: *See—*
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Utrata, Peter J. Disposable combination scalpel blade and incision irrigator for ophthalmological use. 4,642,090, Cl. 604-22.000.

Uttscheid, Georg. Electric overhead trolley conveyor. 4,641,582, Cl. 104-93.000.

Uurtamo, Stephen J., to Motorola, Inc. Adaptive monopulse phase/amplitude calibration correction system. 4,642,642, Cl. 343-165.000.

Vahlensieck, Hans-Joachim: *See—*
Groh, Reiner; Kotzsch, Hans-Joachim; Strebny, Hans-Gunther; and Vahlensieck, Hans-Joachim, 4,642,363, Cl. 556-471.000.

Valev, Marco S.: *See—*
Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., 4,641,791, Cl. 241-66.000.

Valimaki, Yrjo: *See—*
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.

Valleylab, Inc.: *See—*
Lundquist, Ingemar, 4,642,098, Cl. 604-123.000.

Vallourec: *See—*
Peytavin, Pierre, 4,641,513, Cl. 72-214.000.
Plaquin, Bernard A.; and Fradin, Louis, 4,641,410, Cl. 29-407.000.

Valmet-Dominion Inc.: *See—*
Smith, Rodney M.; and Masek, Jiri, 4,641,569, Cl. 92-43.000.

Valyocsik, Ernest W.: *See—*
Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Valyocsik, Ernest W., 4,642,226, Cl. 423-328.000.

Van Antwerp, William P.; and Lincoln, Phillip A., to GSP Metals & Chemicals Corporation. Precious metal recovery using UV ozone. 4,642,134, Cl. 75-101.00R.

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Rongen, Josephus W.; and van Cooten, Robertus, 4,641,950, Cl. 355-3.00R.

Vanderhider, James A.: *See—*
Turner, Robert B.; Peffley, Richard D.; and Vanderhider, James A., 4,642,320, Cl. 521-176.000.

Vanderlaan, Robert D.; and Heeres, Stanley D., to Pneumo Corporation. Direct drive valve and force motor assembly including interchangeable stator assembly and alignment system or method. 4,641,812, Cl. 251-65.000.

van der Lely, Cornelis. Soil cultivating machines. 4,641,713, Cl. 172-49.000.

van der Lely, Edwin; and Bom, Cornelis J. G., to C. van der Lely, N.V. Agricultural machine. 4,641,491, Cl. 56-228.000.

van der Weide, Egbert J., to Beisler GmbH. Machine designed to lift a flexible, flat workpiece off a support surface. 4,641,826, Cl. 271-18.300.

Van De Walle, Raymond A.: *See—*
Lauer, John F.; Greenberg, Ronald; and Van De Walle, Raymond A., 4,641,997, Cl. 405-24.000.

Van Gompel, Paul T.: *See—*
Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., 4,641,381, Cl. 2-400.000.

Vano, Joseph A.: *See—*
Klinvex, Daniel E.; Crusi, Suzanne B.; Kepes, William E.; and Vano, Joseph A., 4,642,215, Cl. 376-249.000.

van Rooji, Jacobus H. M.: *See—*
Horowitz, Alexandre; Cuypers, Martinus H.; and van Rooji, Jacobus H. M., 4,642,079, Cl. 474-219.000.

Vansant, Jan; and Overbergh, Noel M. M., to N.V. Raychem S.A. Branch-off clip and assembly. 4,641,402, Cl. 24-703.000.

Varga, Franz, to Rotorcafe AG. Machine with a centrifugal drum. 4,641,572, Cl. 99-286.000.

Vari-X: *See—*
Kitner, William M., 4,641,939, Cl. 354-313.000.

Varian Associates, Inc.: *See—*
Riaziat, Majid; and Zdasiuk, George A., 4,642,587, Cl. 333-125.000.

Varta Batterie A.G.: *See—*
Gummelt, Klaus; Schulz, Jurgen; Salamon, Klaus; and Rabenstein, Heinrich, 4,642,600, Cl. 338-34.000.

Vaughn, Lanny. Safety bumper and air brake actuator. 4,641,871, Cl. 293-118.000.

Vecellio, Bernardino: *See—*
Lanfranconi, Gianmario; and Vecellio, Bernardino, 4,642,415, Cl. 174-22.00R.

Vedage, Gamini A.: *See—*
Klier, Kamil; Herman, Richard G.; and Vedage, Gamini A., 4,642,381, Cl. 564-480.000.

Venaleck, John T.: *See—*
Hartman, John E.; and Venaleck, John T., 4,641,426, Cl. 29-839.000.

Venlet, Gerard W.: *See—*
Gill, Geoffrey Y.; Hunter, Paul H.; and Venlet, Gerard W., 4,642,001, Cl. 408-59.000.

Vent-Axia Limited: *See—*
Vincent, David; and Mahabir, Aloysius G., 4,642,725, Cl. 361-154.000.

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Sustmann, Scarlet, 4,642,108, Cl. 604-379.000.

Versaci, Antonio A. Method and device for authentication of first day of issue stamps. 4,641,578, Cl. 101-426.000.

Vetanen, William A.; Gleason, Kimberly R.; and Beers, Irene G., to Triquint Semiconductors, Inc. Source-side self-aligned gate process. 4,642,259, Cl. 428-137.000.

Viale, Daniel: *See—*
Bard, Max; Sibilo, Gerard; Marello, Georges; Viale, Daniel; and Louis, Michel, 4,641,985, Cl. 403-16.000.

Vicari, Richard: *See—*
Okamoto, Yoshiyuki; and Vicari, Richard, 4,642,393, Cl. 568-734.000.

Victor Company of Japan, Ltd.: *See—*
Kobayashi, Toshio; and Hishiki, Hideo, 4,642,528, Cl. 315-368.000.
Kohda, Kazuo, 4,642,712, Cl. 360-85.000.
Miyamoto, Ritsu, 4,642,714, Cl. 360-96.500.
Ohira, Tsunehisa; Hirano, Shinji; and Sadakane, Koji, 4,642,713, Cl. 360-85.000.
Takanashi, Itsuo; Miyoshi, Tadayoshi; Nakagaki, Shintaro; and Nishiyama, Hiroshi, 4,642,677, Cl. 358-43.000.

Victoria University of Manchester, The: *See—*
Turner, John T.; and Christodoulou, Marios, 4,642,185, Cl. 210-242.300.

Vidal, Jean L.: *See—*
Morterol, Frederic; and Vidal, Jean L., 4,642,328, Cl. 526-125.000.

Vigneron, Gerard G.; and Brule, Jean C. R. Method of and apparatus for the cutting of windows in mats. 4,641,556, Cl. 83-36.000.

Vilimek, Vaclav F., to Texas Instruments Incorporated. Sensor responding to the action of a force. 4,641,539, Cl. 73-862.670.

Villavicencio, Eduardo J.; and Arana, Jorge E., to Process Evaluation and Development Corporation. Fiber depither. 4,641,792, Cl. 241-74.000.

Vinal, Albert W., to International Business Machines Corporation. Twin track vertical magnetic recording servo control method. 4,642,709, Cl. 360-77.000.

Vincent, David; and Mahabir, Aloysius G., to Vent-Axia Limited. DC solenoid actuator circuits. 4,642,725, Cl. 361-154.000.

Virtanen, Risto: *See—*
Andersson, Jan A. R.; Moren, Nils F. E.; Wetterlin, Kjell I. L.; Snellman Wasenius, Kaija A.; and Virtanen, Risto, 4,641,644, Cl. 128-200.230.

Viskase Corporation: *See—*
Kupcikevicius, Vytautas, 4,641,687, Cl. 138-118.100.

Vlasek, David J.; and Riddle, Harry W., to Baker Oil Tools, Inc. Segmented concentric centralizer. 4,641,776, Cl. 228-155.000.

Vlasich, Richard J., to Alcon Laboratories, Inc. Metering dispenser for high viscosity compositions. 4,641,766, Cl. 222-391.000.

Voest-Alpine Aktiengesellschaft: *See—*
Brandl, Erich, 4,641,889, Cl. 299-75.000.

Vogel, Ferdinand L., to Intercal Company. Compositions for improving the stability of intercalated graphite structural members. 4,642,201, Cl. 252-503.000.

Voith Turbo GmbH & Co. KG: *See—*
Murner, Ulf, 4,641,683, Cl. 137-487.500.

Volkmar, Ralf R., to Siemens Energy & Automation, Inc. U-shaped solid magnetic core with at least one opening through the midsection thereof. 4,642,594, Cl. 335-227.000.

Vollmann, Norbert; and Mader, Leopold, to U.S. Philips Corporation. Video cassette recorder with improved tape guiding and tensioning. 4,642,706, Cl. 360-74.300.

Volvo Car B.V.: *See—*
Horowitz, Alexandre; Cuypers, Martinus H.; and van Rooji, Jacobus H. M., 4,642,079, Cl. 474-219.000.

Volz, Peter: *See—*
Boehm, Peter; Volz, Peter; Bischoff, Gilbert; Booten, Sigmund; Engert, Klaus; and Loew, Albin, 4,641,568, Cl. 91-369.00A.

Von Duprin, Inc.: *See—*
Haeck, Paul J.; and Jacobs, Gary R., 4,641,866, Cl. 292-336.300.

von Minden, Charles: *See—*
Schultheiss, Georg; von Minden, Charles; and Fritzke, Hans W., 4,642,300, Cl. 501-124.000.

Voss, Karl D.; Datte, Mark A.; and Ruff, Gary F., to General Motors Corporation. Countergravity casting mold and core assembly. 4,641,703, Cl. 164-255.000.

VTA Technologies, Inc.: *See—*
Orsburn, Michael L.; Hemsky, Robert L.; and Bacon, James I., 4,642,682, Cl. 358-80.000.

W. P. Hickman Company: *See—*
Webb, Russell; and Hickman, John B., 4,641,476, Cl. 52-60.000.

W. R. Grace & Co.: *See—*
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,641,471, Cl. 52-361.000.
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,641,472, Cl. 52-361.000.

W. Schlafhorst & Co.: *See—*
Grecksch, Hans; Schwalm, Hans-Werner; and Thomalla, Johannes, 4,641,740, Cl. 198-487.100.
Raasch, Hans; and Wassenhoven, Heinz-Georg, 4,641,494, Cl. 57-401.000.

Wachenschwanz, David E.; and Jeffers, Frederick J., to Eastman Kodak Company. Optimum control of overwrite by record gap length selection. 4,642,718, Cl. 360-119.000.

Wada, Kiyokazu: *See—*
Takano, Hiroshi; Takagi, Shinichi; and Wada, Kiyokazu, 4,642,080, Cl. 474-244.000.

Wada, Yoshinori, to Ricoh Company, Ltd. Facsimile relay device. 4,642,697, Cl. 358-257.000.

Wada, Yoshiomi. Picture book having a telephone dial therein. 4,642,054, Cl. 434-178.000.

Wada, Yuichi: *See—*
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.

Wade, Wallace R., to Ford Motor Company. Continuous rotary regeneration system for a particulate trap. 4,641,496, Cl. 60-274.000.

Wagerer, Helmut F.: *See—*
Lorenzi, Donald E.; Wagerer, Helmut F.; and Spevak, Lev, 4,641,529, Cl. 73-601.000.

Wagner, Rudolf, to REMS-WERK Christian Foll und Sohne GmbH & Co. Holder for motor driven tools. 4,642,002, Cl. 408-105.000.

Wajima, Motoyo: *See—*
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.

Wakabayashi, Noboru; Akiyama, Katsuhiko; Soda, Yutaka; and Uchida, Hiroyuki, to Sony Corporation. Magnetic transducer head assembly with support system therefor. 4,642,716, Cl. 360-104.000.

Wakita, Kazuto; Tsuchiya, Kazuo; Nagayasu, Isao; and Emoto, Ikuo, to Ube Industries, Ltd. Substrate for planographic plate. 4,642,260, Cl. 428-215.000.

Wakita, Syotaro: *See—*
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.

Waldemar Link GmbH & Co: *See—*
Keller, Arnold, 4,642,121, Cl. 623-18.000.

Waldemar Link GmbH & Co.: *See—*
Link, Helmut D.; and Keller, Arnold, 4,641,749, Cl. 206-370.000.

Walinsky, Paul; Rosen, Arye; and Greenspon, Arnold J., to RCA Corporation. Method and apparatus for high frequency catheter ablation. 4,641,649, Cl. 128-303.100.

Walker, Adrian W.: *See—*
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., 4,642,198, Cl. 252-94.000.

Walker, Charles S., to Honeywell, Inc. Replica driver transformer for inverter circuit. 4,642,749, Cl. 363-56.000.

Walker, George E., to Monsanto Company. Process and device for temporarily holding and releasing objects. 4,642,254, Cl. 428-36.000.

Walker, Harold L., to Nolte, Albert C., Jr., a part interest. Automatic variable speed transmission. 4,642,070, Cl. 474-57.000.

Walker, Mildred W. Cosmetic carrier with removable resilient retaining means. 4,641,751, Cl. 206-478.000.

Wallace, Allen K., to Urban Transportation Development Corporation Ltd. Integrally air cooled linear induction motor. 4,642,493, Cl. 310-13.000.

Wallace, James P., to Mobil Oil Corporation. Technique for locating injected gas in oil bearing formations behind casing. 4,642,460, Cl. 250-256.000.

Wallace, Stanley J.; Jedlicka, Josef E.; and Peck, Wilbur M., Jr., to Xerox Corporation. Conductive brush paper position sensor. 4,641,949, Cl. 355-3.0SH.

Wallgren, Matti; and Tynkkynen, Pertti. Cloth spreading apparatus with cutter. 4,641,824, Cl. 270-31.000.

Wally, Joseph H.; and Wilson, Samuel E. System and method for projecting multiple images directly onto printing plates. 4,641,958, Cl. 355-71.000.

Walter, Erwin: *See—*
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Walters, Tom. Coupling having spring biased locking means. 4,641,859, Cl. 285-27.000.

Walton, Richard R.; and Munchbach, George E., to Walton, Richard R. Fabric pickup and the like. 4,641,827, Cl. 271-18.300.

Wannborg, Nils A.: *See—*
Muller, Fernand; Wannborg, Nils A.; and Billen, Kurt, 4,641,629, Cl. 126-6.000.

Ward, George D.: *See—*
Cline, J. Douglas; Wilson, James A.; Feher, Stanley H.; and Ward, George D., 4,642,775, Cl. 364-443.000.

Ward, Thomas H.; Costanzo, Phillip A.; Pietrasz, Vincent; and Soeder, Edmund J., to Union Carbide Corporation. Getter assembly providing increased getter yield. 4,642,516, Cl. 313-481.000.

Warner-Lambert Company: *See—*
Fawzi, Mahdi B.; and Taylor, Anne K., 4,642,316, Cl. 514-398.000.
Peters, David; Denick, John, Jr.; and Talwar, Anil K., 4,642,231, Cl. 424-15.000.

Waryasz, Richard E., to Combustion Engineering, Inc. Steam generator with expansion joint. 4,641,608, Cl. 122-510.000.

Wassel, William W.: *See—*
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Wassenhoven, Heinz-Georg: *See—*
Raasch, Hans; and Wassenhoven, Heinz-Georg, 4,641,494, Cl. 57-401.000.

Wassmer, Peter J.: *See—*
Kiser, David G.; Spaulding, Donald M.; and Wassmer, Peter J., 4,641,876, Cl. 294-86.400.

Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Elevator rescue apparatus during stoppage of power supply. 4,642,474, Cl. 307-64.000.

Watanabe, Hideo, to Komori Printing. Double sheet detection method and apparatus of sheet-fed rotary press. 4,642,456, Cl. 250-223.00R.

Watanabe, Hideo, to Komori Printing Machinery Co., Ltd. Double sheet detection method and apparatus of sheet-fed rotary press. 4,642,457, Cl. 250-223.00R.

Waterbury, L. David: *See—*
Clark, Robin D.; and Waterbury, L. David, 4,642,378, Cl. 564-51.000.

Watkins, James D.: *See—*
Cox, David H.; Andreas, David W.; and Watkins, James D., 4,642,434, Cl. 219-10.55E.

Watson, Pat: *See—*
Oliver, Jim; and Watson, Pat, 4,641,755, Cl. 211-60.100.

Weaver, Robert F., to Emhart Industries, Inc. Method of making a permanent magnet rotor for a synchronous motor. 4,641,422, Cl. 29-598.000.

Weavers, Mark W.: *See—*
Gebeke, Charles D.; and Weavers, Mark W., 4,642,722, Cl. 360-132.000.

Webb, Russell; and Hickman, John B., to W. P. Hickman Company. Roof edge construction. 4,641,476, Cl. 52-60.000.

Weber, Walter: *See—*
Daumuller, Hans; and Weber, Walter, 4,642,739, Cl. 362-226.000.

Wedgwood, Francis A.; Peck, Peter F.; and Stevens, Michael P., to United Kingdom Atomic Energy Authority. Superimposition of non-visual signals upon an image signal in a video display system. 4,642,687, Cl. 358-110.000.

Weed, Michael A.: *See—*
Collins, David W.; and Weed, Michael A., 4,642,562, Cl. 324-83.00D.

Wehner, Wolfgang; Muller, Horst, deceased (by Muller, Anneliese, Silvia Muller, Werner J. Muller, heirs); and Schneider, Rainer, to Ciba-Geigy Corporation. Stabilization of chlorine-containing thermoplastics with nitrogen-containing organic compounds. 4,642,322, Cl. 524-191.000.

Wehr, Rudolf: *See—*
Elbs, Peter; Jeserich, Wolfgang-Dieter; and Wehr, Rudolf, 4,642,211, Cl. 264-85.000.

Weickert, Chris A.; and Briosi, Gordon K., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Dual-function storage container for prilled explosive. 4,641,581, Cl. 102-307.000.

Weidner, Robert H., to United Technologies Corporation. Coolable stator assembly for a rotary machine. 4,642,024, Cl. 415-116.000.

Weihl, Richard H.: *See—*
Ray, Douglas M.; and Weihl, Richard H., 4,641,454, Cl. 43-26.000.

Weil, Edward D.: *See—*
Honig, Milton L.; and Weil, Edward D., 4,642,366, Cl. 558-138.000.

Weinger, Ralph, to Color Systems Technology, Inc. Priority masking techniques for video special effects. 4,642,676, Cl. 358-22.000.

Weise, Lutz: *See—*
Belart, Juan; Burgdorf, Jochen; Bieckmann, Hans W.; Weise, Lutz; and Seibert, Wolfram, 4,641,895, Cl. 303-119.000.

Weisman, Jason: *See—*
Tripp, Edwin P., III; Weisman, Jason; and Hissong, George, 4,642,244, Cl. 427-44.000.

Weitemeyer, Christian: *See—*
Langner, Jaroslav; and Weitemeyer, Christian, 4,642,356, Cl. 549-214.000.

Welker, Lynn C.: *See—*
Miller, Richard T.; Sukhman, Yefim P.; and Welker, Lynn C., 4,642,439, Cl. 219-121.0LN.

Wellcome Foundation Limited, The: *See—*
Whitehead, Derek J.; and Shepherd, Michael T., 4,642,230, Cl. 424-15.000.

Weller, Harold N., III: *See—*
Gordon, Eric M.; and Weller, Harold N., III, 4,642,315, Cl. 514-307.000.

Wenk, Erich: *See—*
Koziol, Konrad; and Wenk, Erich, 4,642,173, Cl. 204-242.000.

Weresch, Thomas. Apparatus for lining up electrical components to form a belt. 4,642,159, Cl. 156-510.000.
Werner H. K. Peters Maschinen Fabrik GmbH: *See*—
Hoffmann, Martin, 4,642,087, Cl. 493-463.000.
Werner Thieme GmbH & Co. KG: *See*—
Kolblin, Karl, 4,641,829, Cl. 271-268.000.
West Virginia University: *See*—
Stiller, Alfred H.; and Smith, James E., 4,641,611, Cl. 123-55.00A.
Westerman, Robert D. Pillar cusp. 4,642,053, Cl. 433-225.000.
Westinghouse Brake and Signal Company Limited: *See*—
Brown, Christopher R.; and Roachsmith, Humphrey, 4,641,803, Cl. 246-34.0CT.
Westinghouse Electric Corp.: *See*—
Alvino, William M.; Fuller, Timothy J.; Cargnel, Louis A.; and Scala, Luciano C., 4,642,170, Cl. 204-181.400.
Bucher, George D.; and Raymond, Theodore E., 4,642,016, Cl. 414-421.000.
Campbell, Robert R., 4,642,641, Cl. 342-82.000.
Cho, Gyu-Hyeong, 4,642,747, Cl. 363-54.000.
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Yamamoto, Ken. Dies for forming a chain. 4,641,701, Cl. 164-90.000.
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Yamashita, Yukio, to Kyocera Corporation. Mount for quartz crystal oscillator device. 4,642,510, Cl. 310-348.000.
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Yu, Li K., to Fu-Chi Metalic Engineering Co. Ltd. Hydraulic jack. 4,641,815, Cl. 254-93.00H.

Yuasa, Kazuhiro, to Ricoh Company, Ltd. Ion projection recording apparatus. 4,641,955, Cl. 355-14.0TR.

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Ziemann, Heinz: *See*—
Hajek, Manfred; Salzburg, Herbert; and Ziemann, Heinz, 4,642,344, Cl. 544-196.000.

Zimmerman, John D., to Bunn-O-Matic Corporation. Brewing funnel with screen filter assembly. 4,642,190, Cl. 210-464.000.

Zimmermann, Josef: *See*—
Dettbarn, Hans-Jurgen; and Zimmermann, Josef, 4,642,095, Cl. 604-72.000.

Zinnen, Hermann A.; and Franczyk, Thad S., to UOP Inc. Process for separating isomers of dinitrotoluene. 4,642,397, Cl. 568-934.000.

Zinnen, Norbert: *See*—
Poque, Dionysius J.; and Zinnen, Norbert, 4,641,670, Cl. 152-158.000.

Zivitz, Maury: *See*—
White, Lionel S., Jr.; and Zivitz, Maury, 4,642,784, Cl. 364-551.000.

Zumbach Electronic AG: *See*—
Merki, Hubert, 4,641,525, Cl. 73-432.100.

Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., to Shiley, Inc. Unitary venous return reservoir with cardiotomy filter. 4,642,089, Cl. 604-4.000.

Zurex Corporation: *See*—
Kiser, David G.; Spaulding, Donald M.; and Wassmer, Peter J., 4,641,876, Cl. 294-86.400.

Zveibil, Salvador M. Curtain of windable oscillating blades. 4,641,700, Cl. 160-133.000.

Zverina, Karel: *See*—
Schnackel, Jay F.; and Zverina, Karel, 4,642,440, Cl. 219-121.0PP.

Zwanenburg, Rob: *See*—
De Haan, Frans W.; Wynia, Jan; and Zwanenburg, Rob, 4,641,798, Cl. 244-173.000.

501 Brio AB: *See*—
Petersson, Nils A. I., 4,641,878, Cl. 295-49.000.

501 Saipem S.p.A.: *See*—
Cianci, Giuseppe; and Traverso, Carlo, 4,641,984, Cl. 403-14.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF FEBRUARY, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bhattacharya, Bhairab C., to Bhattacharya, Bhairab C.; and Bhattacharya, Manju. Thermal convection counter streaming sedimentation and forced convection galvanization method for controlling the sex of mammalian offspring. Re. 32,350, Cl. 204-180.100.

Bhattacharya, Manju: *See*—
Bhattacharya, Bhairab C., Re. 32,350, Cl. 204-180.100.

Glucksman, Dov Z. Hair roller. Re. 32,349, Cl. 132-33.00R.

Pevsner, Paul H. Miniature balloon catheter method and apparatus. Re. 32,348, Cl. 128-325.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Brandolf, Henry E., to Multi-Arc Vacuum Systems Inc. Planetary substrate support apparatus for vapor vacuum deposition coating. B1 4,485,759, 2-10-87, Cl. 118-503.000.

Contempart Originals, Inc.: *See*—
Ross, Gilbert B.; and Stevens, Theodore E., B1 4,433,070, Cl. 523-171.000.

Emmett, Robert C., Jr., to Envirotech Corporation. Thickening device and method. B1 4,055,494, 2-10-87, Cl. 210-715.000.

Envirotech Corporation: *See*—
Emmett, Robert C., Jr., B1 4,055,494, Cl. 210-715.000.

Gottlieb, Nathan. Self-contained activated slide apparatus and methods of constructing and utilizing same. B1 3,994,539, 2-10-87, Cl. 384-49.000.

Horton Co., The: *See*—
Horton, Lowell C., B1 4,373,058, Cl. 524-705.000.

Horton, Lowell C., to Horton Co., The. Polymer concrete comprising furfuryl alcohol resin. B1 4,373,058, 2-10-87, Cl. 524-705.000.

Jung, Werner, to Katrapat AG. Device for carrying flexible cables or pipes from a fixed connection point to a mobile consumer by means of a flexible tube. B1 3,957,084, 2-10-87, Cl. 138-122.000.

Katrapat AG: *See*—
Jung, Werner, B1 3,957,084, Cl. 138-122.000.

Multi-Arc Vacuum Systems Inc.: *See*—
Brandolf, Henry E., B1 4,485,759, Cl. 118-503.000.

Ross, Edgar A., to Woven Electronics Corp. Woven electrically conductive cable and method. B1 3,909,508, 2-10-87, Cl. 174-117.00M.

Ross, Gilbert B.; and Stevens, Theodore E., to Contempart Originals, Inc. Cultured onyx products and methods therefor. B1 4,433,070, 2-10-87, Cl. 523-171.000.

Stevens, Theodore E.: *See*—
Ross, Gilbert B.; and Stevens, Theodore E., B1 4,433,070, Cl. 523-171.000.

Woven Electronics Corp.: *See*—
Ross, Edgar A., B1 3,909,508, Cl. 174-117.00M.

LIST OF DESIGN PATENTEES

Adams, Duane D., to North American Philips Corporation. Handle for a beauty care appliance or the like. 288,250, 2-10-87, Cl. D28-35.000.

Airwick Industries, Inc.: *See*—
Hasler, Theodore J., 288,149, Cl. D4-114.000.

Akiyama, Kunio, to Sharp Corporation. Electronic teller machine. 288,203, 2-10-87, Cl. D14-106.000.

Aktiebolaget Gustavsberg: *See*—
Engstrand, Sture, 288,153, Cl. D6-460.000.

Albert Roller GmbH & Co. KG Werkzeug- und Maschinenfabrik: *See*—
Urspruch, Hans, 288,167, Cl. D8-61.000.

Amaray International Corporation: *See*—
Northrup, Allan R.; and Tomkinson, John G., 288,145, Cl. D3-35.000.

American Greetings Corporation: *See*—
Bedell, Rickie T.; and Winslow, David, 288,219, Cl. D21-113.000.

Anzelone, Thomas A.; and Jordan, Willis Y., III, to International Business Machines Corporation. Keyboard for a personal computer. 288,204, 2-10-87, Cl. D14-100.000.

Artemide S.p.A.: *See*—
De Lucchi, Michele, 288,247, Cl. D26-85.000.

Beal, Glenn I.; Hauger, Harry L.; and Leer, Rick, to Gilmour Manufacturing Co. Quick-connective coupling. 288,229, 2-10-87, Cl. D23-43.000.

Beardsley, Michael L., to Marsellus Casket Co. Burial casket. 288,256, 2-10-87, Cl. D99-7.000.

Beardsley, Michael L., to Marsellus Casket Co. Burial casket. 288,257, 2-10-87, Cl. D99-7.000.

Bedell, Rickie T.; and Cavnar, Kathryn A., to Kenner Parker Toys Inc. Toy radio. 288,218, 2-10-87, Cl. D21-113.000.

Bedell, Rickie T.; and Winslow, David, to American Greetings Corporation. Toy radio. 288,219, 2-10-87, Cl. D21-113.000.

Bergeron, Robert M. Outboard motor mounting bracket. 288,205, 2-10-87, Cl. D15-4.000.

Blatherwick, William J.; Hamilton, Leslie; and Holewinski, Robert D., to Johnson & Johnson Dental Products Company. Container for a shade guide and dental syringes. 288,233, 2-10-87, Cl. D24-31.000.

Blatherwick, William J.; Hamilton, Leslie; and Holewinski, Robert D., to Johnson & Johnson Dental Products Company. Combined container and display case for dental articles. 288,234, 2-10-87, Cl. D24-31.000.

Bode, Robert H.; and Hidden, William P., to Cambridge Wire Cloth Co., The. Close rib belt module for an endless conveyor belt. 288,255, 2-10-87, Cl. D34-29.000.

Boyd Lighting Company: *See*—
Pfister, Murray C., 288,249, Cl. D26-131.000.

Bredendick, Kenneth E.: *See*—
Schulz, Galyn A.; Bredendick, Kenneth E.; Gooding, Chester W., Jr.; and Schumacker, Allen C., 288,150, Cl. D5-53.000.

Bridgestone Corporation: *See*—
Hayakawa, Toshio, 288,190, Cl. D12-147.000.
Nakagawa, Masao; and Hayakawa, Toshio, 288,191, Cl. D12-147.000.

Burns, Rickey D.: *See*—
Payne, Calvin L., Jr.; Ingersoll, Brian E.; and Burns, Rickey D., 288,161, Cl. D6-522.000.

Cain, Ann S., to 'totes', incorporated. Umbrella handle. 288,144, 2-10-87, Cl. D3-12.000.

Cambridge Wire Cloth Co., The: *See*—
Bode, Robert H.; and Hidden, William P., 288,255, Cl. D34-29.000.

Capitol Products Corporation: *See*—
Schmidt, Dietrich F., 288,244, Cl. D25-52.000.

Caron, Frederic J. Automobile carriage rack. 288,193, 2-10-87, Cl. D12-157.000.

Cathcart, Janet F.; and Ingersoll, Kathleen. Food tote bag. 288,146, 2-10-87, Cl. D3-42.000.

Cavnar, Kathryn A.: *See*—
Bedell, Rickie T.; and Cavnar, Kathryn A., 288,218, Cl. D21-113.000.

Chan, Raymond, to Integrated Display Technology Limited. Stopwatch. 288,176, 2-10-87, Cl. D10-30.000.
Chuan-Shing Mold Plastics & Toys Co., Ltd.: *See*—
Su, Kuo-Shin, 288,220, Cl. D21-149.000.
Classics Motor Carriages: *See*—
Crawford, Thomas J., 288,186, Cl. D12-92.000.
Clover Manufacturing Co., Ltd.: *See*—
Matsubayashi, Takashi, 288,181, Cl. D10-97.000.
Cohen, Morton. Cutlery sharpener. 288,169, 2-10-87, Cl. D8-93.000.
Corder, Thomas E.; and Mullins, Keith M., to Intermatic Electronics Incorporated. Power failure warning light. 288,245, 2-10-87, Cl. D26-26.000.
Crane Co.: *See*—
Smith, Vance, 288,231, Cl. D23-58.000.
Crawford, Dennis L., to Lenox, Incorporated. Jewelry display stand. 288,155, 2-10-87, Cl. D6-467.000.
Crawford, Thomas J., to Classics Motor Carriages. Automobile. 288,186, 2-10-87, Cl. D12-92.000.
De Lucchi, Michele, to Artemide S.p.A. Wall lamp. 288,247, 2-10-87, Cl. D26-85.000.
Derosa, Alfred C. Button. 288,185, 2-10-87, Cl. D11-226.000.
Design Institute America, Inc.: *See*—
Winzeler, Robert C., III, 288,159, Cl. D6-495.000.
Dey, Ranjit. Battery charger mounting bracket. 288,171, 2-10-87, Cl. D8-73.000.
D'Innocente, Ralph; and Drasin, Larry, to Jacuzzi Inc. Whirlpool bath tub. 288,239, 2-10-87, Cl. D24-38.000.
Diversified Products Corporation: *See*—
Rockwell, Gary L., 288,224, Cl. D21-195.000.
Drasin, Larry: *See*—
D'Innocente, Ralph; and Drasin, Larry, 288,239, Cl. D24-38.000.
Dunnington, Bennett F. Hand rest. 288,158, 2-10-87, Cl. D6-491.000.
Ebata, Yoshikazu: *See*—
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Eldon Industries, Inc.: *See*—
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Engineered Design Inc.: *See*—
Moscovitch, Jerry N., 288,206, Cl. D15-30.000.
Engstrand, Sture, to Aktiebolaget Gustavsberg. Display stand. 288,153, 2-10-87, Cl. D6-460.000.
Envall, Bjorn E. A.; and Giugiaro, Giorgetto, to Saab-Scania Aktiebolag. Left front fender for an automobile. 288,195, 2-10-87, Cl. D12-184.000.
Evenson, Mel, to Eldon Industries, Inc. Vertically extending divider for use in a filing system. 288,214, 2-10-87, Cl. D19-99.000.
Falls, Dennis A.: *See*—
Fuhrman, John F.; Shumaker, Paul K.; and Falls, Dennis A., 288,202, Cl. D14-86.000.
Fenne, Kenneth R., to Pittway Corporation. Fire extinguisher valve. 288,252, 2-10-87, Cl. D29-5.000.
Fink, David, to Windsor Industries, Inc. Water resistant portable radio. 288,201, 2-10-87, Cl. D14-68.000.
Fishkind, Gregory A.: *See*—
Maroney, Ralf P.; and Fishkind, Gregory A., 288,160, Cl. D6-511.000.
Fontlladosa, Enrique B. Combined whistling lollipop and musical slide. 288,140, 2-10-87, Cl. D1-106.000.
Ford Motor Company: *See*—
Stoddard, John; and Grinyer, Clive, 288,198, Cl. D14-1.000.
Stoddard, John; and Grinyer, Clive, 288,199, Cl. D14-68.000.
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Foster, Will H. Gas pump nozzle clip and key holder. 288,170, 2-10-87, Cl. D8-349.000.
Frontline Products, Inc.: *See*—
Sandor, Joseph, 288,157, Cl. D6-474.000.
Fuhrman, John F.; Shumaker, Paul K.; and Falls, Dennis A., to Maxcom Electronics, Inc. Microwave receiving antenna. 288,202, 2-10-87, Cl. D14-86.000.
Fuller, Ronald C., to Mead Johnson & Company. Neonatal natural nipple. 288,240, 2-10-87, Cl. D24-46.000.
Fuller, Ronald C., to Mead Johnson & Company. Neonatal natural nipple. 288,241, 2-10-87, Cl. D24-46.000.
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Gooding, Chester W., Jr.: *See*—
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Goudy, Richard A. Racing wheel. 288,197, 2-10-87, Cl. D12-210.000.
Govenius, Rainer, to Mediman Oy. Surgical suction instrument. 288,242, 2-10-87, Cl. D24-51.000.
Graham, Charles H., to Tekna-Tool, Inc. Multiple-tip tool. 288,168, 2-10-87, Cl. D8-85.000.
Gregg, A. Wellborn. Ski mitt. 288,142, 2-10-87, Cl. D2-610.000.
Grinyer, Clive: *See*—
Stoddard, John; and Grinyer, Clive, 288,198, Cl. D14-1.000.
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Blatherwick, William J.; Hamilton, Leslie; and Holewinski, Robert D., 288,234, Cl. D24-31.000.
Hasler, Theodore J., to Airwick Industries, Inc. Carpet deodorizer applicator brush. 288,149, 2-10-87, Cl. D4-114.000.
Hatton, Rosanne; and Wallace, Bud. Cat litter box. 288,253, 2-10-87, Cl. D30-99.000.
Hauger, Harry L.: *See*—
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Hawkins, Joseph O. Base bracket for combined ram housing and actuator. 288,208, 2-10-87, Cl. D15-138.000.
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Hayakawa, Toshio: *See*—
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Heldor Industries, Inc.: *See*—
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Helinsky, Jonathan. Combined dispenser and caddy for baby toiletries. 288,147, 2-10-87, Cl. D3-74.000.
Henkels, Walter. Thermometer. 288,178, 2-10-87, Cl. D10-58.000.
HGK Advertising, Inc.: *See*—
Kanellos, William, 288,172, Cl. D9-304.000.
Hidden, William P.: *See*—
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Hills Industries Limited: *See*—
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Hobgood, Barbara J. Display stand. 288,154, 2-10-87, Cl. D6-466.000.
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Blatherwick, William J.; Hamilton, Leslie; and Holewinski, Robert D., 288,234, Cl. D24-31.000.
Homsy, Charles A.; Tellkamp, John W.; and Kent, John N., to Vitek, Inc. Temporomandibular joint prosthesis. 288,236, 2-10-87, Cl. D24-33.000.
Homsy, Charles A.; Tellkamp, John W.; and Kent, John N., to Vitek, Inc. Temporomandibular joint prosthesis. 288,237, 2-10-87, Cl. D24-33.000.
Homsy, Charles A.; Tellkamp, John W.; and Kent, John N., to Vitek, Inc. Temporomandibular joint condylar prosthesis. 288,238, 2-10-87, Cl. D24-33.000.
Hope, Thomas C.; and Quintner, Alexander D. Therapeutic mitt. 288,235, 2-10-87, Cl. D24-36.000.
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Hutton, William B.; and Hutton, Deanice B. Bedclothes fastener for a waterbed. 288,162, 2-10-87, Cl. D6-607.000.
Ikeda, Kazushige, to Sumitomo Rubber Industries, Ltd. Motorcycle tire. 288,196, 2-10-87, Cl. D12-147.000.
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Jensen, Fritz. Airship toy balloon. 288,216, 2-10-87, Cl. D21-84.000.
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Kaplan, Andrew J.: *See*—
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Klamer, Reuben B., to Quaker Oats Company, The. Roller skate. 288,225, 2-10-87, Cl. D21-226.000.
Knochner, Michael: *See*—
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Lee, Freddy T. Racquetball trophy. 288,183, 2-10-87, Cl. D11-160.000.
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Beardsley, Michael L., 288,257, Cl. D99-7.000.
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Matsuda, Takashi, to Takara Co., Ltd. Combined reconfigurable toy cassette and a box. 288,221, 2-10-87, Cl. D21-150.000.
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Fuller, Ronald C., 288,241, Cl. D24-46.000.
Meade, Ronald G., to Hills Industries Limited. Lower support collar for arms of a collapsible clothes drier. 288,254, 2-10-87, Cl. D32-58.000.
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Mednis, Juris M., to Universal Symetrics Corporation. Bottle or similar article. 288,173, 2-10-87, Cl. D9-375.000.
Mednis, Juris M., to Universal Symetrics Corporation. Bottle or similar article. 288,174, 2-10-87, Cl. D9-375.000.
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Morales, Liborio D. Foldable, self-supporting, adjustable book holder. 288,213, 2-10-87, Cl. D19-91.000.
Morris, Larry D. Vehicle operator's fold up foot rest. 288,187, 2-10-87, Cl. D12-114.000.
Moscovitch, Jerry N., to Engineered Design Inc. Operator's cab for a crane. 288,206, 2-10-87, Cl. D15-30.000.
Mullins, Keith M.: *See*—
Corder, Thomas E.; and Mullins, Keith M., 288,245, Cl. D26-26.000.
Nakagawa, Masao; and Hayakawa, Toshio, to Bridgestone Corporation. Motorcycle tire. 288,191, 2-10-87, Cl. D12-147.000.
Nakatani, Akihiro, to Sumitomo Rubber Industries, Ltd. Automobile tire. 288,192, 2-10-87, Cl. D12-147.000.
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Nuncio, Martin. Wine rack. 288,156, 2-10-87, Cl. D6-468.000.
Oden, Donald D. Mail box. 288,258, 2-10-87, Cl. D99-30.000.
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532.1 4,642,191
638 4,642,192
682 4,642,193
699 4,642,194
715 B1 4,055,494
798 4,642,195

CLASS 211

26 4,641,754
60.1 4,641,755
89 4,641,756

CLASS 212

205 4,641,757

CLASS 215

1 C 4,641,758
220 4,641,759

CLASS 219

10.41 4,642,442
10.55 E 4,642,434
4,642,443
10.55 F 4,642,435
69 D 4,642,444
78.11 4,642,436
84 4,642,437
121 FS 4,642,445
121 L 4,642,438
121 LD 4,642,446
121 LN 4,642,439
121 PP 4,642,440
124.34 4,642,447
216 4,642,448
364 4,642,441

CLASS 220

1 B 4,641,760
66 4,641,761
81 R 4,641,762

CLASS 222

129.1 4,641,763
146.2 4,641,764
386.5 4,641,765
391 4,641,766
590 4,641,768
591 4,641,767

CLASS 224

314 4,641,769

CLASS 226

23 4,641,770
115 4,641,771

CLASS 227

123 4,641,772

CLASS 228

1.1 4,641,773
2.5 4,641,774
4,641,775
155 4,641,776

CLASS 229

110 4,641,777

CLASS 235

22 4,642,449
50 R 4,642,450

CLASS 236

20 R 4,641,778

CLASS 238

7 4,641,779

CLASS 239

150 4,641,780
159 4,641,781
265.29 4,641,782
265.39 4,641,783
453 4,641,784
590 4,641,786
597 4,641,785

CLASS 241

5 4,641,787
14 4,641,788
31 4,641,789
46.17 4,641,790
66 4,641,791
74 4,641,792

CLASS 242

18 PW 4,641,793
47.01 4,641,794
59 4,641,795

CLASS 244

3.14 4,641,801
3.28 4,641,802
35 R 4,641,796
153 R 4,641,797
173 4,641,798
207 4,641,799
218 4,641,800

CLASS 246

34 CT 4,641,803

CLASS 248

205.1 4,641,804
273 4,641,805
430 4,641,806
480 4,641,807
550 4,641,808
559 4,641,809
635 4,641,810

CLASS 249

122 4,641,811

CLASS 250

201 4,642,451
213 VT 4,642,452
214 A 4,642,453
221 4,642,454
4,642,455
223 R 4,642,456
4,642,457
225 4,642,458
227 4,642,459
256 4,642,460
311 4,642,461
327.2 4,642,462
336.1 4,642,463
363 S 4,642,464
389 4,642,465
392 4,642,466
492.3 4,642,467
548 4,642,468
561 4,642,469
566 4,642,470
574 4,642,471
578 4,642,472

CLASS 251

65 4,641,812

CLASS 252

88 4,642,196
94 4,642,198
98 4,642,197
299.61 4,642,199
400.54 4,642,200
503 4,642,201
511 4,642,202
631 4,642,203
633 4,642,204

CLASS 254

8 B 4,641,813
10.5 4,641,814
93 H 4,641,815
228 4,641,816

CLASS 260

501.17 4,642,205

CLASS 264

0.5 4,642,206
10 4,642,207
37 4,642,208
46.4 4,642,209
62 4,642,210
85 4,642,211
262 4,642,212

CLASS 267

140.1 4,641,817

CLASS 269

43 4,641,818
45 4,641,819
58 4,641,820
234 4,641,821
296 4,641,822
322 4,641,823

CLASS 270

31 4,641,824
53 4,641,825

CLASS 271

18.3 4,641,826
4,641,827
227 4,641,828
268 4,641,829
274 4,641,830

CLASS 272

31 R 4,641,831
67 4,641,832
72 4,641,833
76 4,641,834
87 4,641,835
122 4,641,836
123 4,641,837

CLASS 273

73 J 4,641,838
128 A 4,641,839
138 A 4,641,840

CLASS 277

30 4,641,841
83 4,641,842

CLASS 280

6 R 4,641,843
30 4,641,844
79.1 A 4,641,845
80 B 4,641,846
242 WC 4,641,847
4,641,848
270 4,641,849
289 WC 4,641,850
414.1 4,641,851
489 4,641,852
661 4,641,853
701 4,641,854
716 4,641,855
772 4,641,856
821 4,641,857

CLASS 285

27 4,641,859
38 4,641,860
39 4,641,861
4,641,862
94 4,641,858
158 4,641,863
179 4,641,864

CLASS 292

5 4,641,865
336.3 4,641,866
4,641,867
4,641,868
339 4,641,869

CLASS 293

102 4,641,870
118 4,641,871
133 4,641,872

CLASS 294

1.4 4,641,873
15 4,641,874
82.11 4,641,875
86.4 4,641,876
101 4,641,877

CLASS 295

49 4,641,878

CLASS 296

78 A 4,641,879
154 4,641,880
202 4,641,881

CLASS 297

183 4,641,882
184 4,641,883
284 4,641,884
300 4,641,885
4,641,886
362 4,641,887

CLASS 299

64 4,641,888
75 4,641,889

CLASS 301

37 SS 4,641,890

CLASS 303

10 4,641,891
47 4,641,892
113 4,641,893
114 4,641,894
119 4,641,895

CLASS 307

38 4,642,473
64 4,642,474
66 4,642,475
108 4,642,476
113 4,642,477
118 4,642,478
141 4,642,479
147 4,642,480
252 UA 4,642,481
264 4,642,482
300 4,642,483
362 4,642,484
443 4,642,485
463 4,642,486
465 4,642,487
475 4,642,488
514 4,642,489
540 4,642,490
571 4,642,491
578 4,642,492

CLASS 310

13 4,642,493
49 R 4,642,494
52 4,642,495
68 B 4,642,496
68 R 4,642,497
71 4,642,498
89 4,642,499
90.5 4,642,500
4,642,501
156 4,642,502
214 4,642,503
308 4,642,504
312 4,642,505
313 B 4,642,507
313 D 4,642,506
321 4,642,508
323 4,642,509
348 4,642,510
4,642,511

CLASS 312

110 4,641,896
183 4,641,897
209 4,641,898

CLASS 313

25 4,642,512
110 4,642,513
111 4,642,514
414 4,642,515
481 4,642,516
495 4,642,517

CLASS 315

1.0 4,642,518
4,642,519
73 4,642,520
106 4,642,521
111.31 4,642,522
111.81 4,642,523
169.3 4,642,524
219 4,642,525
244 4,642,526
368 4,642,527
4,642,528
4,642,529
371 4,642,530
4,642,531
386 4,642,532
408 4,642,533

CLASS 318

138 4,642,534
139 4,642,538
161 4,642,535
254 4,642,536
4,642,537
439 4,642,539
568 4,642,540
616 4,642,541
636 4,642,542
696 4,642,543
4,642,544
749 4,642,545
798 4,642,546

CLASS 322

3 4,642,547
25 4,642,548

CLASS 323

210 4,642,549
222 4,642,550
314 4,642,551
315 4,642,552
322 4,642,553

CLASS 324

51 4,642,554
60 C 4,642,555
67 4,642,556
71.2 4,642,557
72 4,642,559
72.5 4,642,558
73 PC 4,642,560
73 R 4,642,561
83 D 4,642,562
111 4,642,563
132 4,642,564
158 R 4,642,565
4,642,566
309 4,642,567
4,642,568
318 4,642,569
366 4,642,570

CLASS 328

59 4,642,571
228 4,642,572

CLASS 329

50 4,642,573
4,642,574

CLASS 331

1 A 4,642,575
1 R 4,642,576
47 4,642,577
100 4,642,578
111 4,642,579
117 D 4,642,580
154 4,642,581

CLASS 332

7.51 4,642,582

CLASS 333

14 4,642,583
17 L 4,642,584
21 R 4,642,585
122 4,642,586
125 4,642,587
139 4,642,588
182 4,642,589
218 4,642,590
227 4,642,591
246 4,642,592

CLASS 335

52 4,642,593
227 4,642,594

CLASS 336

98 4,642,596
135 4,642,595

CLASS 337

82 4,642,597
4,642,598
397 4,642,599

CLASS 338

34 4,642,600
35 4,642,601
162 4,642,602

CLASS 339

14 R 4,641,901
17 LC 4,641,900
59 M 4,641,899
91 R 4,641,902
99 R 4,641,903
4,641,904
103 B 4,641,905
143 R 4,641,906
147 R 4,641,907
206 R 4,641,908
210 M 4,641,909
221 R 4,641,910
276 T 4,641,911

CLASS 340

52 B 4,642,603
60 4,642,604
130 4,642,605
134 4,642,606
310 A 4,642,607
347 AD 4,642,609
347 DA 4,642,608
365 S 4,642,610
385 4,642,611
541 4,642,612
572 4,642,613
608 4,642,614
630 4,642,615
654 4,642,616
680 4,642,617
683 4,642,618
701 4,642,619
713 4,642,620
721 4,642,621
724 4,642,622
728 4,642,623
735 4,642,624
747 4,642,625
750 4,642,626
765 4,642,627
784 4,642,628
825 4,642,629
825.31 4,642,631
825.44 4,642,632
825.5 4,642,630
825.76 4,642,633
870.02 4,642,634
870.04 4,642,636
870.19 4,642,637

CLASS 342

14 4,642,643
4,642,644
42 4,642,640
45 4,642,638
47 4,642,639
82 4,642,641
379 4,642,645
407 4,642,646
415 4,642,647
455 4,642,648
458 4,642,649

CLASS 343

165 4,642,642
745 4,642,650
754 4,642,651
915 4,642,652

CLASS 346

1.1 4,642,653
4,642,654
76 PH 4,642,655
4,642,656
4,642,657
4,642,658
4,642,659

140 R 4,642,660
153.1 4,642,661
215 4,642,662
221 4,642,663

CLASS 350

96.10 4,641,912
96.11 4,641,913
96.15 4,641,914
96.18 4,641,915
96.23 4,641,916
96.33 4,641,917
125 4,641,918
138 4,641,919
173 4,641,920
320 4,641,921
331 R 4,641,922
335 4,641,923
339 R 4,641,924
345 4,641,925
394 4,641,926
413 4,641,927
427 4,641,928
432 4,641,929
529 4,641,930
538 4,641,931
587 4,641,932
613 4,641,933

CLASS 351

159 4,641,934

CLASS 354

173.11 4,641,935
212 4,641,936
238.1 4,641,937
243 4,641,938
313 4,641,939
322 4,641,940
324 4,641,941
406 4,641,942
413 4,641,943

CLASS 355

1 4,641,944
3 DD 4,641,945
4,641,946
3 R 4,641,947
4,641,950
3 SH 4,641,948
4,641,949
7 4,641,951
14 R 4,641,952
4,641,953
4,641,954
14 TR 4,641,955
15 4,641,956
58 4,641,957
71 4,641,958
77 4,641,959

CLASS 356

2 4,641,960
124 4,641,961
4,641,962
4,641,964
124.5 4,641,963
135 4,641,965
237 4,641,966
4,641,967
313 4,641,968
343 4,641,969
350 4,641,970
357 4,641,971
376 4,641,972
418 4,641,973

CLASS 357

2 4,642,664
6 4,642,665
23.4 4,642,666
23.5 4,642,673
23.8 4,642,674
35 4,642,667
36 4,642,668
40 4,642,672
52 4,642,669
68 4,642,670
79 4,642,671

CLASS 358

21 R 4,642,675
22 4,642,676
43 4,642,677
44 4,642,678
75 4,642,679
78 4,642,680
79 4,642,681
80 4,642,682
4,642,683
4,642,684
84 4,642,685
107 4,642,686
110 4,642,687
166 4,642,689
169 4,642,690
188 4,642,691
229 4,642,692
236 4,642,693
4,642,694
237 4,642,695
243 4,642,696
257 4,642,697
260 4,642,698
280 4,642,699
285 4,642,700
296 4,642,701
322 4,642,702
342 4,642,703

CLASS 360

10.2 4,642,704
18 4,642,705
74.3 4,642,706
76 4,642,707
77 4,642,708
4,642,709
79 4,642,710
84 4,642,711
85 4,642,712
4,642,713
96.5 4,642,714
97 4,642,715
104 4,642,716
105 4,642,717
119 4,642,718
126 4,642,719
4,642,720
132 4,642,721
4,642,722

CLASS 361

96 4,642,724
124 4,642,723
154 4,642,725
198 4,642,726
212 4,642,727
213 4,642,728
293 4,642,729
315 4,642,730
319 4,642,731
321 4,642,732
363 4,642,733
380 4,642,734
424 4,642,735

CLASS 362

31 4,642,736
61 4,642,737
119 4,642,738
226 4,642,739
268 4,642,740
320 4,642,741
375 4,642,742

CLASS 363

21 4,642,743
4,642,744
37 4,642,745
49 4,642,746
54 4,642,747
56 4,642,748
4,642,749
4,642,750
159 4,642,751

CLASS 364

167 4,642,752
184 4,642,753
191 4,642,754
200 4,642,755
4,642,756
4,642,757
4,642,758
4,642,759
4,642,760
4,642,761
300 4,642,762
4,642,763
4,642,764
4,642,765
402 4,642,766
406 4,642,767
408 4,642,768
415 4,642,769
424 4,642,770
424.1 4,642,771
431.04 4,642,772
431.05 4,642,773
434 4,642,774
443 4,642,775
449 4,642,776
476 4,642,777
498 4,642,778
512 4,642,780
513 4,642,781
520 4,642,779
550 4,642,782
551 4,642,783
4,642,784
557 4,642,785
559 4,642,786
561 4,642,787
567 4,642,788
900 4,642,789
4,642,790
4,642,791
4,642,792
4,642,793
4,642,794

CLASS 365

10 4,642,795
114 4,642,799
221 4,642,797
230 4,642,798

CLASS 366

342 4,641,974

CLASS 367

85 4,642,800
88 4,642,801
168 4,642,802

CLASS 368

124 4,641,975

CLASS 369

54 4,642,803

CLASS 370

3 4,642,804
13.1 4,642,426
58 4,642,805
95 4,642,806

CLASS 371

31 4,642,807
39 4,642,808

CLASS 372

66 4,642,809

CLASS 375

37 4,642,810

CLASS 376

218 4,642,213
221 4,642,214
249 4,642,215
327 4,642,216
451 4,642,217

CLASS 378

53 4,642,811

CLASS 379

57 4,642,425
107 4,642,635

CLASS 380

11 4,642,688
48 4,642,424

CLASS 381

1 4,642,812

CLASS 382

8 4,642,813

CLASS 384

49 B1 3,994,539
95 4,641,976
99 4,641,977
102 4,641,978
146 4,641,979

CLASS 400

120 4,641,980
124 4,641,981
690.1 4,641,982

CLASS 403

12 4,641,983
14 4,641,984
16 4,641,985
164 4,641,986
169 4,641,987
245 4,641,988
302 4,641,989
317 4,641,990
382 4,641,992
397 4,641,991

CLASS 404

4 4,641,993
6 4,641,994
118 4,641,995

CLASS 405

2 4,641,996
24 4,641,997
169 4,641,998
215 4,641,999
221 4,642,000

CLASS 408

59 4,642,001
105 4,642,002
144 4,642,003

CLASS 409

136 4,642,004
232 4,642,005
233 4,642,006

CLASS 410

78 4,642,007

CLASS 411

16 4,642,008
38 4,642,009
69 4,642,010
258 4,642,011
371 4,642,012

CLASS 414

73 4,642,013
96 4,642,014
325 4,642,015
348 4,642,017
421 4,642,016
502 4,642,018
525 R 4,642,019
621 4,642,020
735 4,642,021

CLASS 415

5 4,642,022
53 R 4,642,023
116 4,642,024
139 4,642,025
150 4,642,026
177 4,642,027

CLASS 416

95 4,642,028
129 4,642,029

CLASS 417

203 4,642,030
223 4,642,031
269 4,642,032
295 4,642,033
4,642,034
312 4,642,035
353 4,642,036
571 4,642,037

CLASS 419

11 4,642,218

CLASS 420

33 4,642,135
104 4,642,219

CLASS 422

16 4,642,221
101 4,642,220
111 4,642,222
191 4,642,223

CLASS 423

244 4,642,225
321 R 4,642,224
328 4,642,226
349 4,642,227
350 4,642,228

CLASS 424

1.1 4,642,229
15 4,642,230
4,642,231
19 4,642,232
4,642,233
78 4,642,234

CLASS 425

93 4,642,038
140 4,642,039
204 4,642,040
208 4,642,041
364 R 4,642,042
547 4,642,043
593 4,642,044

CLASS 426

5 4,642,235
44 4,642,236
64 4,642,237
74 4,642,238
396 4,642,239
538 4,642,240
634 4,642,241

CLASS 427

2 4,642,242
38 4,642,243
44 4,642,244
47 4,642,245
127 4,642,246
214 4,642,247
224 4,642,248
388.5 4,642,249

CLASS 428

1 4,642,250
7 4,642,251
35 4,642,252
36 4,642,253
4,642,254
38 4,642,255
42 4,642,256
63 4,642,257
68 4,642,258
137 4,642,259
215 4,642,260
225 4,642,261
296 4,642,262
336 4,642,263
367 4,642,264
375 4,642,265
412 4,642,266
413 4,642,267
453 4,642,268
516 4,642,269
621 4,642,270
698 4,642,271

CLASS 429

17 4,642,272
22 4,642,273
35 4,642,274
52 4,642,275

CLASS 430

30 4,642,276
57 4,642,277
66 4,642,278
4,642,279
73 4,642,280
138 4,642,281
165 4,642,282
303 4,642,283

CLASS 431

4 4,642,045
354 4,642,046

CLASS 432

13 4,642,047
103 4,642,048
223 4,642,049

CLASS 433

56 4,642,050
100 4,642,051
189 4,642,052
225 4,642,053

CLASS 434

178 4,642,054
268 4,642,055

CLASS 435

7 4,642,284
4,642,285
25 4,642,286
99 4,642,287
4,642,288
101 4,642,289
128 4,642,290
240 4,642,291
4,642,292
4,642,293

CLASS 436

5 4,642,294
87 4,642,295
138 4,642,296

CLASS 440

15 4,642,056
52 4,642,057
61 4,642,058
75 4,642,059

CLASS 441

70 4,642,060
83 4,642,061

CLASS 446

68 4,642,062
94 4,642,063
4,642,064
209 4,642,065
420 4,642,066

CLASS 464

175 4,642,067

CLASS 474

11 4,642,068
28 4,642,069
57 4,642,070
63 4,642,071
82 4,642,072
111 4,642,073
156 4,642,074
160 4,642,075
201 4,642,076
4,642,077
206 4,642,078
219 4,642,079
244 4,642,080
253 4,642,081
260 4,642,082

CLASS 493

93 4,642,083
190 4,642,084
222 4,642,085
341 4,642,086
463 4,642,087

CLASS 501

78 4,642,297
96 4,642,298
97 4,642,299
124 4,642,300

CLASS 502

231 4,642,301
315 4,642,303
332 4,642,302
427 4,642,304

CLASS 514

182 4,642,305
222 4,642,306
252 4,642,307
253 4,642,308
269 4,642,309
301 4,642,310
307 4,642,315
316 4,642,311
364 4,642,312
374 4,642,313
398 4,642,316
475 4,642,314
558 4,642,317
560 4,642,318

CLASS 521

175 4,642,319
176 4,642,320

CLASS 523

171 B1 4,433,070
400 4,642,321

CLASS 524

191 4,642,322
458 4,642,323
559 4,642,324
705 B1 4,373,058

CLASS 525

65 4,642,325
153 4,642,326
434 4,642,327

CLASS 526

125 4,642,328
284 4,642,329

CLASS 528

335 4,642,330
492 4,642,331

CLASS 530

313 4,642,332
350 4,642,333
388 4,642,334
409 4,642,335
500 4,642,336

CLASS 534

11 4,642,337
558 4,642,338
650 4,642,339

CLASS 536

55.2 4,642,340

CLASS 540

350 4,642,341
356 4,642,342
488 4,642,343

CLASS 544

196 4,642,344
251 4,642,345
276 4,642,346

CLASS 546

181 4,642,347
216 4,642,348
302 4,642,349

CLASS 548

260 4,642,350
317 4,642,351
422 4,642,352
431 4,642,353
473 4,642,354
533 4,642,355

CLASS 549

214 4,642,356
226 4,642,357
245 4,642,358
356 4,642,359
534 4,642,360
546 4,642,361

CLASS 556

419 4,642,362

CLASSIFICATION OF PATENTS

438	4,642,364
471	4,642,363
CLASS 558	
83	4,642,365
138	4,642,366
CLASS 560	
40	4,642,367
65	4,642,368
77	4,642,369
100	4,642,370
114	4,642,371
124	4,642,372
139	4,642,373
204	4,642,374
CLASS 562	
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	467	288,155
	468	288,156
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	131	288,249
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